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BIOMEDICAL AND BEHAVIORAL SCIENCES  
No. 77

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USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS  
BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 77

This serial publication contains abstracts of articles and news items from USSR and Eastern Europe scientific and technical journals on the specific subjects reflected in the table of contents.

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I. BIOMEDICAL SCIENCES  
Agrotechnology

USSR

UDC 615.9:63(470.34+470.41)

USE OF PESTICIDES IN AGRICULTURE OF THE VOLGA-VYATKA ECONOMIC REGION AND TATAR ASSR AND ENVIRONMENTAL PROTECTION

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian No 1, 1977 signed to press  
14 Sep 76 pp 80-83

IMAMOV, A. KH., Kazan' Order of the Red Banner of Labor Medical Institute  
imeni S. V. Kurashov

[Abstract] The kinds and quantities of insecticides, fungicides, and herbicides used in various parts of the Volga-Vyatka economic region (Gorkiy and Kirov oblasts, Mariy ASSR, etc.) and the Tatar ASSR were investigated from 1972 to 1974 as a basis for establishing a single, scientific system for checking on the level and dynamics of accumulation of the pesticides in soil and farm produce. The toxic chemicals most widely used were the insecticides antio, lindane, carbophos, polychloropinene, rogor, DDT, and chlorophos, the fungicides ethyl mercuric chloride, heptathiuram, cuprosan, TMTD, zineb, etc., and the herbicides a,d-D esters, pyramine, simazine, semeron, and sodium tri-chloracetate. While the total consumption of the pesticides tended to decrease during the years under study, the very persistent, persistent, and highly toxic kinds were used in greater quantities. More than 8545.5 tons were used in 1972, 7561.8 in 1973, and 6711.4 in 1974. Almost 2300 tons were applied in the Tatar ASSR in 1973 compared to about 2000 tons in 1974, a higher rate than in other republics and oblasts of the zone due to the fact that the cultivated area of the republic is much larger. The stable and highly toxic lindane, ethyl mercuric chloride, and metaphos were extensively used in 40 different parts of the Volga-Vyatka economic region and Tatar ASSR. References 2 (Russian).

USSR

UDC 575.1:581.15

'BACKGROUND SIGNS' FOR RATING THE GENOTYPIC YIELD OF INDIVIDUAL WHEAT PLANTS

Kiev TSITOLOGIYA I GENETIKA in Russian Vol 11 No 1, Jan/Feb 77 signed to press  
9 Jun 76 pp 70-73

MARTYNOV, S. P., KRUPNOV, V. A., and DRAGAVTSEV, V. A., Scientific Research Institute for Agriculture of the Southeast, Saratov; Institute of Cytology and Genetics, Siberian Department, Academy of Sciences USSR, Novosibirsk

[Abstract] The "background sign" method is intended for determining the selection value of individual plants, but also for evaluation of the genetic-statistical parameters of a given population--namely, the coefficients of heritability and genotypic correlation. The effectiveness of the method in selection work is beyond question, but it has not as yet been widely adopted in practical use. The authors studied 16 varieties of soft spring wheat at the

Saratov Selection Center during the period 1974-1975. They established that the grain content of the ears shows a minimal genotypic variance as well as a close paratypical correlation with plant productivity. The possibility of using grain content as a background sign for determining genotypal productivity of individual plants is thus reconfirmed on a model wheat plant population. Table 1; references 8 (Russian).

USSR

UDC 633.11.633.559

#### DETERMINATION OF POTENTIAL PRODUCTIVITY OF WHEAT IN PHYTOTRONS

Moscow DOKLADY VASKhNIL in Russian No 5, 1977 signed to press 14 Feb 77 pp 8-9

NILOVSKAYA, N. T., doctor of biological sciences, and RAZORENOVA, T. A., candidate of biological sciences, All-Union Order of Labor's Red Banner Scientific Research Institute of Fertilizers and Agro-Soil Science imeni D. N. Pryanishnikov

[Abstract] Biological potentialities of 3 varieties of wheat (Leningradka, US-1502 and Verld Sidz-1877) were studied in an airtight phytotron with automatic regulation and registration of basic environmental parameters (irradiance, temperature-humidity regime, atmospheric conditions and mineral supply). Under the controlled conditions of the phytotron, the first yields of spring wheat constituted 700- 2300 hectares of valuable grain from 1 m<sup>2</sup> of sown area for one period of vegetation (80-90 days). The dynamic characteristics of gas exchange, accumulation of biomass, growth and development of the plants, were used to construct mathematical models of the production process of the wheat and for optimization of it. Tables 3; reference 1 (Russian).

USSR

UDC 612.822.1+612.351.11+612.173.1).015.1-06:612.273.2

EFFECT OF EXPERIMENTAL HYPOXIA ON ATPase ACTIVITY OF THE NUCLEI AND MITOCHONDRIA OF THE BRAIN, LIVER, AND HEART

Moscow VOPROSY MEDITSINSKOY KHIMII in Russian Vol 23 No 3, May/June 77 signed  
to press 23 Apr 76 pp 302-308

GOVOROVA, L. V., Laboratory of Physiology of Cerebral Blood Circulation,  
Leningrad Neurosurgical Institute imeni A. L. Polenov

[Abstract] The heterogeneity of literature reports on the influence of hypoxia upon energy exchange and oxidative processes in the mitochondria suggest that the response reaction to hypoxia by the enzyme systems studied is ambiguous. To clarify the picture, the author has examined the influence of several forms of oxygen insufficiency--circulatory, hypoxic, and cytotoxic--upon the activity of  $Mg^{2+}$ -ATPase and 2,4-DNP-ATPase, and, also, the nature of the changes in these enzymes in mitochondrial fractions of the brain, heart, and liver, and in nuclear fractions of the brain and liver. All forms of oxygen starvation lead to alterations in the activity of these enzymes. The most pronounced changes in ATPase activity are seen with cytotoxic hypoxia; circulatory hypoxia was second with respect to depth of developing changes, and hypoxic hypoxia third--for ATPase activity of the mitochondria. The ATPase activity of the nuclear fraction of the brain undergoes a more substantial change with hypoxic hypoxia than with circulatory. The changes seen exhibit a distinct phasic character. Changes in activity in the initial stages of hypoxia are individual in character and are a function of the type of hypoxia and tissue specificity. The changes in ATPase activity in the nuclei and mitochondria of the liver, and, also, in the cardiac mitochondria during circulatory hypoxia, reflect complex metabolic adjustments of the body in response to the local pathological process. Figures 2; tables 5; references 14: 12 Russian, 2 Western.

CATECHOLAMINES, THEIR PRECURSORS AND METABOLITES DURING THE CONDITION OF  
FATIGUE IN MAN AFTER PHYSICAL ACTIVITY

Moscow VOPROSY MEDITSINSKOY KHIMII in Russian Vol 23 No 3, May/June 77 signed  
to press 20 Apr 76 pp 369-375

MATLINA, E. A., VASIL'YEV, V. N., and GALIMOV, C. D., Laboratory of Humoral-  
Hormonal Regulation, All-Union Scientific Research Institute of Physical  
Culture, Moscow

[Abstract] Urinary excretion of catecholamines varies in man with physical exertion and the character of the shifts seen is a function of the duration and intensity of the effort required. The authors have examined urinary excretion of adrenaline, noradrenaline, DOPA and dopamine and the metabolites vanillyl mandelic acid (VMA) and related catecholamine sulfates, following human physical activity, to clarify the changes in catecholamine metabolism. The changes in metabolism were studied in athletes after development of acute fatigue as a result of physical loading. Three types of the changes were identified on the basis of differences in urine excretion. The first type of alterations in catecholamine metabolism comprised the cases, where excretion of catecholamines, their precursors and metabolites did not increase; this appears to relate to the partial exhaustion of hormones and peripheral mediators of the sympathoadrenal system. The second type was characterized by decreased excretion of the substances studied, by development of the "perverted" reactions due to modifications in the regulatory system, which led to the inhibition of the system instead of its stimulation. The third type was manifested as hyperfunction of the system. The increased synthesis of catecholamines during hyperfunction suggests that this process serves as a compensatory reaction to their preceding elevated secretion; the phenomenon appears to depend on the increased secretion of the newly formed catecholamines. Excretion of catecholamines and their precursors was decreased long after development of chronic fatigue in the resting state and increase in excretion of the substances studied was not observed after physical loading. Various types of changes in catechol metabolism during fatigue can occur, related apparently to profound development of weariness, and to the bodily adaptive capacity; the changes also depend on the character of the physical activity. Figures 3; tables 2; references 18: 13 Russian, 5 Western.



## MOLECULAR WEIGHT AND CERTAIN STRUCTURAL PROPERTIES OF YEAST POLYSACCHARIDES WHICH POSSESS ANTIVIRAL PROPERTIES

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 13 No 1, Jan/Feb 77 pp 46-54

KOVALENKO, A. G., and VOTSELKO, S. K., Institute of Microbiology and Virology, Academy of Sciences Ukrainian SSR, Kiev

[Abstract] Preparations of polysaccharides obtained from the yeast *Candida tropicalis* 3v, *C. arborea* KAM-1, and a commercial yeast extract prepared by the Merck company were studied. The effect of these preparations on tobacco mosaic virus was determined. It was established that the preparations consist mainly of glucanes having molecular weights of 10,000-16,500. The preparation from yeast extract contains also mannan (mol. wt. 48,000). The infrared spectra of the purified preparations are basically identical, being characteristic of the polysaccharide group. The differences in light absorption by the various preparations are found in connection with the valence combinations of amino- and amidogroups; probably these differences indicate the presence of proteins (peptides) in either a bound or a free state. The preparation containing mannan is a stronger inhibitor of the virus infection than are the glucane preparations. The relationships between the physical parameters, structure, and biological activity of the biopolymers are discussed. The separation of polysaccharide preparations, the coefficients of sedimentation and diffusion, and the molecular weights of the basic components of the preparations, antiviral activity, and the infrared spectra of the preparations, are illustrated graphically or in tables. Figures 5; tables 2; references 20: 15 Russian, 5 Western.

USSR

UDC 633.11.632.654

RESISTANCE OF WHEAT SPECIES TO WHEAT FLOWER MITE

Moscow DOKLADY VASKhNIL in Russian No 5, 1977 signed to press 6 Jan 76 pp 18-19

DOROFYEV, V. F., doctor of agricultural sciences, and BADULIN, A. V., candidate of biological sciences, All-Union Order of Lenin and Order of Peoples Friendship Scientific Research Institute of Plant Growing imeni N. I. Vavilov

[Abstract] An analysis of the infectability by the wheat flower mite of the stem, ear and flower of representatives of diploid, tetraploid and hexaploid species of wheat indicated that the mite inflicts great damage on the flowers of tetraploid species of wheat but does not injure the diploid species. On bread wheat, the mites developed only on the lower internodes, usually under the sheath of the leaves. Mites were not observed in the generative organs of plants of all hexaploid species studied. Table 1; references 4 (Russian).

USSR

UDC 613.646.612.592.1:625.1)(571.5)

UNIFICATION OF STANDARD REQUIREMENTS FOR CESSATION OR CURTAILING WORK OUTDOORS UNDER CONDITIONS OF SEVERE COLD

Moscow GIGIYENA I SANITARIYA in Russian No 6, Jun 77 signed to press 23 Aug 76 pp 26-28

PROKHOROV, A. A., KANDROR, I. S., and RATNER, All-Union Scientific Research Institute of Railroad Hygiene, Moscow

[Abstract] Analysis by the authors, in the Spring of 1975, of currently existing regulations for limiting work at cold times of the year, indicated that complete cessation of work outdoors in the republics and oblasts of the Asian part of the USSR is provided at temperatures substantially lower than in the European part: in the Yakut ASSR, at  $-50^{\circ}\text{C}$ , in the Buryat ASSR, Irkutsk and Chita oblasts, at  $-45^{\circ}\text{C}$ , independent of the wind force; this contrasts to Arkhangelsk oblast and Vorkuta Rayon at  $-40$ – $-35^{\circ}\text{C}$  ( $-40^{\circ}$  in woodcutting,  $-35^{\circ}$  in simple work), and in Ivanovsk oblast at  $-30^{\circ}$ . The standards vary also in conjunction with wind situations, length of a work session, and work breaks. Kandrор has already published data on acclimatization and appropriate clothing. Discussion is presented of degrees of coldness: mild ( $X_1$ ), moderate ( $X_2$ ), great ( $X_3$ ), and extreme ( $X_4$ ) in relation to the state of thermal comfort ( $N$ ). An attempt is made to reach mathematical quantification of the cold problem which would indicate when work should be stopped. Discussion is related to the practical situation of work on the new Amur magistral RR line. Table 1; references 3 (Russian).

USSR

UDC 581.2:523.745:577.49

LONG-TERM FORECASTING OF BROWN RUST OF WINTER WHEAT IN THE FOREST STEPPE ZONE OF THE UKRAINE IN CONNECTION WITH CHANGES IN SOLAR ACTIVITY

Moscow ZHURNAL OBSHCHEY BIOLOGII in Russian Vol 30 No 3, May/Jun 77 signed to press 20 Jan 76 pp 372-379

MINKEVICH, I. I., and ZAKHAROVA, T. I., Forest Technology Academy imeni S. M. Kirov; All-Union Scientific Research Institute of Plant Protection, Leningrad

[Abstract] It has previously been shown that the frequency of epiphytotic of brown rust (*Puccinia triticina* Eriks) is linked to changes in solar activity. Massive infections occur with a probability of 0.30-0.35 during maximum solar activity (Wolff's numbers exceeding 100). Data for computation came from observations of brown rust in the forest steppe zone of the Ukraine, beginning in 1925 (1941-1945 excepted), and meteorological data came from the "Kiev" station. The coefficients of autocorrelation developed by Yagodinskiy (1973) were used. The correlation between the development of the disease and solar

activity was not very strong. There is a weak periodicity in brown rust, having intervals of 17, 20, and 22 years. The probability is highest during the decline of solar activity (0.42). Other weather factors, particularly precipitation and air temperature, have an effect on the extent of the disease. Tables present data on this. Outbreaks of the disease are expected in 1976-1977, 1981, and 1982. This is subject to changes due to the weather. Tables 2; references 6 (Russian).

USSR

UDC 614.76(047)

HYGIENIC PROBLEMS OF ENVIRONMENT PROTECTION FROM POLLUTION BY WASTES FROM LIVESTOCK-BREEDING COMPLEXES AND POULTRY FARMS

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 pp 61-67 manuscript received 23 Sep 76

NIKITIN, D. P., and NOVIKOV, YU. V., doctors of medical sciences (Moscow)

[Abstract] The construction of large livestock-breeding farms and complexes in the USSR over the past several years has brought about the formation of large quantities of liquid manure (a mixture of liquid and solid excrements), in amounts of up to 500 million tons per year. The output of such large amounts of untreated liquid manure constitutes a threat to the environment. A survey is presented of the various means by which this problem is solved. References 6 (Russian).

USSR

UDC 614.71:636.5(477.62)

EXPERIENCE IN ORGANIZING SANITARY PROTECTION OF THE ATMOSPHERE IN THE POULTRY-FARM REGION OF DONETSKAYA OBLAST

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 6 Aug 76 pp 77-80

GRIN', N. V., POKROVENKO, ZH. I., MALYUCHENKO, R. F., and GRADUSOVA, L. I., Donetskii Medical Institute, Donetskaya Oblast Sanitary Epidemic Station

[Abstract] Large modern poultry-raising farms are sources of pollution of the atmosphere by ammonia, hydrogen sulfide, carbon dioxide, and other cesspool gases. The principal sources of environmental pollution are the poultry houses, the excrement-storage sites and the installations for heat-drying the excrement, and effluent from various production stages. The intensity of atmospheric pollution depends upon the method of poultry maintenance. Air pollution by the poultry farms continues to present a pressing problem. Tables 2; references 3 (Russian).

USSR

UDC 615.371:576.858.13).033.34

PENETRATION OF VARIOLOVACCINE VIRUS ACROSS THE MUCOSA OF THE SMALL INTESTINE AND ITS DISSEMINATION IN THE BODY IN ENTERAL IMMUNIZATION OF MONKEYS

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 6, Jun 77 signed to press 13 Sep 76 pp 35-37

OSIPOV, V. I., VOROB'YEV, A. A., PODKUYKO, V. N., PATRIKEYEV, G. T., and URAINTSEV, A. D., Moscow

[Abstract] The authors used macacus rhesus monkeys (2.0-2.5 kg) to investigate the way of penetration of the title vaccine through the small intestine mucosa. Ten ml of the vaccine, activity  $10^8$  OOE/ml were inserted by probe into the intestinal lumen 25 cm. distal to the bile duct opening. After 5, 15, 30 min, 1,3,6,12,18,48, and 60 hr the monkeys were killed by bleeding (28 monkeys, 2-3 per each time interval). On the basis of morphological and virusological data the authors concluded that, immediately after application of the vaccine on the mucosa, the virus penetrates the epithelial barrier and collects in the t. mucosa propria in macrophage type cells. Then, with the help of the latter, and, possibly, independently (especially after death of the macrophagal cells) the virus penetrates and takes root in the cells of the regional lymph nodes. It very rapidly begins the dissemination process (within 3 hrs) and is detected in the blood, spleen, and liver. Table 1; references 10: 5 Russian, 5 Western.

USSR

UDC 616.912-085.371

COMPARATIVE EVALUATION OF AGENTS AND METHODS OF IMMUNIZATION OF PEOPLE AGAINST NATURAL SMALLPOX

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 6, Jun 77 signed to press 28 Oct 76 pp 31-35

AGAFONOV, V. I., VOROB'YEV, A. A., GAPOCHKO, K. G., MARENNIKOVA, S. S., PATRIKEYEV, G. T., BABKIN, YE. I., LITVINOVA, A. P., SHENKMAN, L. S., DOROKHIN, T. V., PODKUYKO, V. N., SLOBODIN, A. Z., CHERNOSHCHIEV, K. A., BORODAY, A. P., and YEMIL'YANOVA, O. V., Military Medical Academy imeni S. M. Kirov, Leningrad

[Abstract] The authors refer to the international program to eradicate smallpox, and to the possibility of isolated outbreaks of the disease which would require rapid and easily accomplished immunization. They have, in this connection, studied the reactogenicity, antigen activity, and productivity of a peroral method of vaccination prophylaxis of smallpox and compared the peroral method to the scarification and jet procedures. The peroral method is attributed to A. A. Vorob'yev, et al. (1966,1973), and uses tabletted vaccine, effectively and productively. In the present study, the authors vaccinated

3689 young (17-23 yrs), practically healthy people, whose living and working conditions were the same, and who had been, in earlier periods, vaccinated against smallpox: 1677 (peroral), 1864 (jet), and 148 (scarification). The skin scarification and subcutaneous-jet vaccination used a commercial vaccine of the Minsk Institute of Epidemiology and Microbiology (series 606 and 621); peroral procedure used an experimental, tabletted vaccine (series 111, control number 147), whereby the tablet was kept in the mouth until complete resorption. The vaccination methods were essentially equally effective: 80% increase in antibodies in 5 months, falling to 39-61% in 12 months. Revaccination by the scarification and jet methods produced a mean geometric antibody titer increase (11-14 fold), peroral produced a 5-fold increase. The titers were, in no case, below 1:25 (observation time, up to 5 mos.). Vaccination teams (2-3 people) could vaccinate 1456 subjects perorally, per hour, 891 by jet, and 27 by scarification. Tables 4; references 15: 11 Russian, 4 Western.

USSR

UDC 636.082.11

#### IMMUNOGENETIC CHARACTERISTICS OF VARIOUS SWINE BREEDS

Kiev TSITOLOGIYA I GENETIKA in Russian Vol 11 No 1, Jan/Feb 77 signed to press 29 Apr 76 pp 53-57

BEREZOVSKIY, N. D., Poltava Scientific-Research Institute of Swine Breeding

[Abstract] The genetic polymorphism of blood groups and of other biological fluids is taken advantage of in several different ways: 1) for breeding purposes, 2) for study of the gene pool of breeds, herds, etc., and study of group-individual similarities, 3) for study of the immunogenetic equilibrium of animal populations with use of the Hardy-Weinberg law, and 4) for prediction of the productive qualities of swine. Over the period 1971-1975, the author studied the statistical patterns of phenogroup distribution within individual polymorphous systems (erythrocytic antigens of systems of blood groups E, F, G, and L, transferrins, amylase and hemopexins), in herds of three different breeds; also, both inter- and intrabreed features of various herds, by determining the immunogenetic index similarities and the effect of selection on those indexes. More than 1,600 boars and sows served as observation animals, representing 21 different herds. From results obtained, it is concluded that the studied herds differ both on an inter- and on an intrabreed immunogenetic basis, this being shown by the varying frequency in the number of alleles. The indexes of immunogenetic similarity clearly reveal an immunogenetic profile, and also an interconnection between individual breeds and herds. Selection-pedigree work thus far undertaken is shown up clearly in intrabreed differences. Tables 2; references 9: 6 Russian, 3 Western.

USSR

UDC 636.2:636.084.52

USE OF BACTERIAL FERMENTATION PREPARATIONS FOR FATTENING BULL CALVES

Moscow DOKLADY VASKhNIL in Russian No 5, 1977 signed to press 25 May 76 pp 40-42

TORZHKOV, N. I., and SNOZ, G. V., Ryazan Agricultural Institute imeni P. A. Kostychev; Moscow Order of Labor's Red Banner Veterinary Academy imeni K. I. Skryabin

[Abstract] A study of the effect of fermentation preparations GZkh [state agriculture] aminostibulin and GSkh protostibulin in experiments involving 225 bull calves 14-16 months old indicated that fattening on slop and granulated concentrates with BVK [protein-vitamin concentrate] and a mineral mixture and the fermentation preparations enhanced the productivity of the animals without impairing the quality of the meat and without producing morphological changes in the parenchymatous organs.

USSR

UDC 577.150.7

PREPARATION OF IMMOBILIZED PROTEOLYTIC ENZYMES OF ETHYLENE ON A COPOLYMER AND MALEIC ANHYDRIDE

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 13 No 1, Jan/Feb 77 signed to press 4 May 76 pp 88-90

KURICHEV, V. A., FOLOMEYEVA, O. G., TERTERYAN, R. A., KHRAPOV, V. S., KOZLOVA, T. P., and LEBEDEVA, O. G., Moscow Technological Institute of the Meat and Dairy Industry

[Abstract] The covalent immobilization of trypsin, chymotrypsin and papain on ethylene copolymers with maleic anhydride, with various molecular weights and content of divinylbenzene, was studied. The optimal enzyme concentration which would assure a 50% activity upon immobilization was determined, and the shifts of pH and temperature action of soluble and immobilized enzymes were studied. Esterase activity of immobilized trypsin and chymotrypsin with respect to soluble enzymes was determined. Results are illustrated in a set of 4 graphs. Figures 4; references 4 (Russian).

USSR

UDC 577.156.1 + 637.517 + 637.52

HYDROLYSIS OF PROTEINS FROM SPERM WHALE MEAT WITH USE OF A PROTEOLYTIC ENZYME  
PREPARATION OF ACTINOMYCES FRADIAE 119

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 13 No 1, Jan/Feb 77 signed to press 16 Jun 76 pp 79-83

POPOV, N. I., and PETROVA, I. S., Institute of Biochemistry imeni Bakh, Academy of Sciences USSR

[Abstract] Experiments were made on the hydrolysis of the protein of sperm-whale meat (*Physeter catodon*), this species being, in recent years, the principal object of the whaling industry. Since the flesh is not edible in its natural form, the animal has not hitherto been a source of food, even though its meat contains a large amount of nitrogenous substances, and might be the source of a full complement of protein hydrolysates. A proteolytic enzyme preparation of *Actinomyces fradiae* was applied to the whale meat, at pH 8.3-8.5, and substrate concentration of 5%. The level of proteolysis was 85.9% with 1% of protofradin applied for 48 hrs at 37°C, and 81.4% with 1.5% protofradin at 6 hrs at 50°C. The results indicate that sperm whale-based hydrolysates might be used in the preparation of microbiological media and L-amino acids; and, if purified, in the medical and food industries. Corresponding data for 18 amino acids and 3 vitamins are given. Figures 2; tables 3; references 29: 21 Russian, 8 Western.

USSR

UDC 576.809.53

EFFECT OF THE CARBON SOURCE AND pH OF THE NUTRIENT MEDIUM ON THE LEVAN-  
SUCRASE ACTIVITY OF *GLUCONOBACTER OXYDANS* L-1

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 13 No 1, Jan/Feb 77 signed to press 17 May 76 pp 11-15

ELISASHVILI, V. I., and LOYTSYANSKAYA, M. S., Leningrad State University

[Abstract] The authors study the levansucrase activity of a culture of *Glucanobacter oxydans* L-1, in connection with carbon source and pH of the nutrient medium. Relatively high activity of levansucrase was observed with cultivation of bacteria on media containing sorbite or fructose (85.4 and 11.5 mU/ml, respectively); and lowest activity (5.1-8.9 mU/ml) in the case of culturing on a medium containing ethanol, glucose, galactose, or xylose. It is suggested that the low levansucrase activity in these latter cases is due to inactivation of the enzyme and to reduced productive capability of the bacteria as the result of adjusting the medium pH to 2.5-3.5. The greatest activity of extracellular levansucrase is observed during the growth of *G. oxydans* L-1 on a medium with pH of 5.9-5.7. Figure 1; tables 2; references 12: 9 Russian, 3 Western.



USSR

UDC 576.809.53

EFFECT OF THE CARBON SOURCE ON THE ACCUMULATION OF EXTRACELLULAR AMINO ACIDS  
BY THERMOPHILIC BACTERIA

Moscow PRIKLADNAYA BIOKIMIYA I MIKROBIOLOGIYA in Russian Vol 13 No 1, Jan/Feb  
77 signed to press 6 Jul 76 pp 5-10

KVASNIKOV, YE. I., and ZHURAVEL', A. M., Institute of Microbiology and Virology  
imeni Zabolotnyy, Academy of Sciences Ukrainian SSR, Kiev

[Abstract] The authors study the effect of the carbon source on the accumulation of amino acids by thermophilic aerobic bacteria in the filtrate of the culture liquid, the bacteria being spore-forming and possessing various degrees of carbon assimilation. It is shown that the form of the synthesizing bacterium, the carbon source, and the interaction between these two factors, all exert an effect on the total amino acid content of the liquid phase, including the sulfur-containing acids. The greatest effect of the carbon source is exerted on the accumulation, within the culture liquid, of a group of amino acids having alkaline properties, the content of which (at least in representatives of all species studied) is greatest when paraffin is used as the natural carbon source. When cultivated on an n-paraffin-containing medium, the species *Bacillus circulans thermophilus* was found to produce significantly more amino acids than with culturing on a medium with saccharose (as compared with other thermophiles). Figure 1; tables 4; references 11: 3 Russian, 8 Western.

USSR

UDC 577.152

STUDY OF THE PROPERTIES OF A PREPARATION OF LYTIC ENZYMES PREPARED ON A CULTURE OF *BACILLUS SUBTILIS*

Moscow PRIKLADNAYA BIOKIMIYA I MIKROBIOLOGIYA in Russian Vol 13 No 1, Jan/Feb  
77 signed to press 26 Apr 76 pp 55-59

KISLUKHINA, O. V., and BIZYULYAVICHYUS, G. S., All-Union Scientific Research Biotechnical Institute; All-Union Scientific Research Institute of Applied Enzymology

[Abstract] The effect of several factors (pH, temperature, the presence of various salts and certain chemical compounds) on the activity of a preparation of lytic enzymes from a culture of *Bacillus subtilis* was studied. It was shown that a preparation is active in neutral solutions of low ionic strength at temperatures of 30-50°C. Salts of magnesium, manganese, copper, zinc, lead, mercury, aluminum, and iron, as well as tris-buffer and Triton X-100, suppress the activity of lysosubtilin, whereas lactic acid shows an activating influence. At 30°C the preparation is stable in the pH range of 5-10, and incubation in the course of 1 hr at 60° results in loss of 50% of activity. Lysosubtilin lyses the cells of gram-positive and gram-negative

bacteria, yeasts and fungi. The effects of pH,  $\text{Na}_2\text{HPO}_4$  concentration, and temperature on lysosubtilin activity are illustrated graphically; also the effect of various pH on the stability of lysosubtilin. The corresponding effects of 22 chemical compounds and several preparations are illustrated in a table. Figures 4; table 1; references 23: 2 Russian, 21 Western.

USSR

UDC 576.809.8

THERMOGENESIS OF THE YEAST CANDIDA GUILLIERMONDII, STRAIN H-542, IN FLOW CULTIVATION OF PARAFFIN

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 13 No 1, Jan/Feb 77 signed to press 12 May 76 pp 33-35

KORYAGIN, V. V., ZVEREVA, G. A., CHIRKOV, I. M., and BRAVICHEV, R. N., All-Union Scientific-Research Institute of the Biosynthesis of Protein Substances

[Abstract] A study was made of the thermogenesis of the yeast *Candida guilliermondii*, strain H-542, using various values of the dilution factor and of the paraffin concentration. A chamber fermenter of intensive mass-exchange and volume 12 l was used, with both intermittent and flow cultivation. The dilution factor varied from 0.14 to 0.66  $\text{hr}^{-1}$ . With increase in the dilution factor, the specific heat-release was found to rise. It was shown that the presence of any perceptible thermogenesis, independently of the flow regime, precedes the start of biomass formation by some 1-3 hrs. The authors' results regarding the magnitude of specific heat-release confirm the findings of earlier investigators, both calculated and experimental. The thermogenesis curves were of the wave type. Figure 1; table 1; references 13: 7 Russian, 6 Western.

USSR

UDC 620.197 + 632.934.1

INCREASING THE FUNGAL RESISTANCE OF THE EPOXIDE POLYMER KD-4 BY INTRODUCING FUNGICIDAL ADDITIVES

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 13 No 1, Jan/Feb 77 signed to press 13 Apr 76 pp 138-141

SMIRNOV, V. F., ANISIMOV, A. A., and SEMICHEVA, A. S., Gor'kiy State University

[Abstract] The effect of mold fungi on the epoxide polymer KD-4 was studied by introducing various fungicidal substances. This polymer by itself had no fungal resistance, and was most vigorously attacked by *Aspergillus niger*, A.

flavus, and *Trichoderma lignorum*. Of the 33 substances tested, only 2 were fungicidal, and 11 were fungus-resistant. Isopropylmercurchloride (0.5%), merthiolate (1%), and copper sulfate (5%) were the most effective. Table 1; references 10 (Russian).

USSR

UDC 613.632:546.73

ACCUMULATION, DISTRIBUTION, AND MORPHOLOGICAL CHANGES IN THE BODY DUE TO  
INHALATION OF METALLIC COBALT AEROSOL

Moscow GIGIYENA I SANITARIYA in Russian No 6, Jun 77 signed to press 6 Aug 76  
pp 12-15

POPOV, L. N., KOCHETKOVA, T. A., GUSEV, M. I., MARKINA, N. A., YELFIMOVA, YE.  
V., and TIMONOV, M. A., Moscow Scientific Research Institute of Hygiene imeni  
F. F. Erisman

[Abstract] The authors studied the distribution of cobalt in the body of the white rat when the cobalt was inhaled around-the-clock for 3 mos. at aerosol concentrations of metallic cobalt of 0.5; 0.05; 0.005; and 0.001 mg/m<sup>3</sup>. Content of cobalt in the body was measured after 1-1/2 mos and 3 mos from the start of the test and 3 mos after its completion, i.e., in the recovery period. The metal was assayed by paper chromatography; pathomorphological changes were noted. Accumulation occurred mainly in the lungs, thyroid, liver, and kidneys. Data of assays are given for these organs, and for the spleen. The degree of accumulation was proportional to the aerosol content of the cobalt. Organ damage was intensified with increased accumulation of cobalt. In the recovery period, despite the residual high content of metal in the animal body, the morphological changes disappear testifying to the rapid recovery. The 0.0001 mg/m<sup>3</sup> level apparently does not cause morphological changes. Figures 3; table 1; references 2 (Russian).

USSR

UDC 613.633:614.77)-07:616-091.8-092.9

HISTOLOGICAL CHANGES IN THE ORGANS OF EXPERIMENTAL ANIMALS CAUSED BY SOIL  
DUST, CHEMICAL FERTILIZERS AND TOXIC CHEMICALS

Moscow GIGIYENA I SANITARIYA in Russian No 6, Jun 77 signed to press 23 Aug 76  
pp 15-18

MALEN'KIY, V. P., candidate of medical sciences, Vinnitsa Medical Institute  
imeni N. I. Pirogov

[Abstract] The effects on 130 white rats of the various title factors (singly, or in combination) in a farm environment were investigated. The author attempted to create the problems which would affect mechanizer workers during a 3 month season. One group of animals was administered 50 mg of soil dust, intratracheally; a second, 10 mg of chemical fertilizers (it); a third, dust, plus PCP (fed); a fourth, dust, fertilizers, and PCP. Diffuse injury of the bronchial tree and of the lung parenchyma of a mixed character--manifested as an inflamed bronchitis, peribronchitis, perivascularitis, pneumonia, diffuse pneumosclerosis and emphysema in other parenchymatous organs with indication of

protein dystrophy of cells--developed under the action of the dust, fertilizers, and chemical poisons. Chemical fertilizers and organophosphorus chemicals, in minimum quantities, promoted a potentiation of the pathological action of the dust. The results indicate that corresponding prophylactic measures are strongly indicated in practical agricultural work. References 6 (Russian).

USSR

UDC 613.644:613

PHYSIOLOGICAL HYGIENIC BASIS FOR INTRODUCTION OF RECESS BREAKS IN WORK PERFORMED UNDER INTENSIVELY NOISY CONDITIONS

Moscow GIGIYENA I SANITARIYA in Russian No 6, Jun 77 signed to press 6 Aug 76 pp 29-32

ORLOVSKAYA, E. P., candidate of medical sciences, and LIPOVOY, V. V., Kiev Institute of Labor Hygiene and Occupational Diseases

[Abstract] The authors have tried to determine the optimum duration for work breaks and their disposition over the course of a work shift, in relation to prevailing noise and nature of the job. They found that the physiological status of the workers (visual motor reaction, pulse, muscle endurance, frequently of light flashes) deteriorates after 3 hr of work and 2 hrs after a break, when the job is done under 91-103 dBA sound. They recommend a work rest 2 hr after a free-time break. Work at 100-103 dBA should be relieved with an optimal break of 15 min; at lower sound levels, 10-15 min. Extension to 20 min has no advantage. The break improves the physiological state and working effectiveness up to the end of a shift. The break should provide an acoustically pleasant environment (55-65 dBA), in acoustically fitted rooms. Figures 2; table 1; references 3 (Russian).

USSR

UDC 616-006.6-092-02:547.545]-092.9:597.82

NITROSAMINE-INDUCED TUMORS IN THE GRASS FROG (RANA TEMPORARIA)

Leningrad VOPROSY ONKOLOGII in Russian Vol 23 No 1, 1977 pp 96-98

KHUDOLEY, V. V., Candidate of Medical Sciences, Scientific-Research Institute of Oncology imeni Petrov, Ministry of Health USSR

[Abstract] Of great interest on the plane of comparative evolution is the sensitivity of various animal species to the blastomogenic action of the nitroso compounds. The subject of the present study was the sensitivity of tailless amphibians to the carcinogenic action of the nitrosoamines, and also the morphology of the corresponding neoplasms. For this purpose 455 grass frogs (*Rana temporaria*) in the 1-1.5-year age group were used as test animals, one group being treated with diethylamine (DEA) and a second with diethylnitrosamine (DENA). Of these groups, 43.6 and 44.2% respectively developed tumors of the liver and the hematopoietic system within a period of 6-8 weeks. Since spontaneous tumors of these types are quite rare among amphibians, the causative role of DEA and DENA in tumor formation is virtually certain. The practical aspect of research of the present type consists in the possible use of amphibians as "probes" in the evaluation of human working environments. Figure 1; table 1; references 9: 2 Russian, 7 Western.

USSR

UDC 614.72:678.4

HYGIENIC STANDARDIZATION OF DIMETHYLDIOXANE IN THE ATMOSPHERE

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 23 Sep 76 pp 7-11

DUBROVSKAYA, F. N., KHACHATURYAN, M. K., LEVKIN, V. P., BORODINA, YE. V., NIKOL'SKAYA, R. M., and SMIRNOV, V. T., Moscow Scientific Research Institute of Hygiene imeni F. F. Erisman

[Abstract] The physical characteristics of dimethyldioxane (DMD) an air pollutant present in the discharges accompanying the production of synthetic isoprene rubber are described. The action of DMD on man at concentrations of 0.01 to 0.39 mg/m<sup>3</sup> in short-term inhalation, and on experimental animals at 0.004 to 0.35 mg/m<sup>3</sup> in chronic experimental poisoning, was studied. The threshold of olfactory sensation, the latent period of the reflex motor reaction, and the bioelectric activity of the cerebral cortex in response to the action of DMD, were determined in the observed humans. The effect of DMD on the blood, the cardiovascular system, and the nervous system was investigated in experimental animals. Continuous 3-month inhalation of DMD at concentrations of 0.35 and 0.01 mg/m<sup>3</sup> reliably manifested an unfavorable effect upon the blood, the cardiovascular system, and the nervous system. According to changes noted in the blood of the experimental animals, namely an increase in

the cholesterol level and the beta-lipoproteide level, and signs of depolymerization of the principal substance of the aorta wall, DMD may be considered to be a potential atherogen. It is recommended that DMD concentrations ineffective for the human body ( $0.01 \text{ mg/m}^3$ ), and for the body of animals ( $0.004 \text{ mg/m}^3$ ), be adopted as the maximum permissible concentration for the atmosphere of inhabited places ( $0.01 \text{ mg/m}^3$  as the maximum single-time concentration,  $0.004 \text{ mg/m}^3$  as the average daily concentration). References 2 (Russian).

USSR

UDC 613.32:547.535.1

HYGIENIC STANDARDIZATION OF SODIUM SALTS OF META- AND PARA-DIISOPROPYLBENZENE DIHYDROPEROXIDES IN THE WATER OF RESERVOIRS

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 3 Mar 76 pp 11-14

ILICHKINA, A. G., candidate of medical sciences, Leningrad Sanitary Hygienic Medical Institute

[Abstract] In the production of resorcin and hydroquinone, the sodium salts meta-diisopropylbenzene dihydroperoxide (Na-m) and para-diisopropylbenzene dihydroperoxide (Na-p) penetrate into the sewage; when this sewage is flushed into a reservoir, it can disrupt the reservoir sanitary regime. Therefore, hygienic standardization of Na-m and Na-p in the water of reservoirs is required. The influence of Na-p and Na-m is studied in connection with the problem of sanitary protection of reservoirs, namely their influence on the sanitary regime of reservoirs, on the organoleptic properties of the water, and on the bodies of warm-blooded animals. The subthreshold concentrations of Na-m were 2.7 and 0.5 mg/liter, respectively, and those of Na-p, 2.7 and 1.0 mg/liter. Solutions which contain amounts of the test substances up to 7 mg/l are not colored, and their taste is not adversely affected. Chemical changes in the substances alter the sanitary properties of water. On the basis of their established toxicities in animals, the maximum permissible concentration proposed for Na-p is 1 mg/liter and that for Na-m is 0.5 mg/liter. References 3 (Russian).

USSR

UDC 613.63+615.917]:547.258.11

COMPARATIVE HYGIENIC TOXICOLOGIC ASSESSMENT OF TIN-ALKYL OXIDES

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 15 Mar 76 pp 14-18

MAZAYEV, V. T., IGUMNOV, A. S., TSAY, V. N., and SHLEPINA, T. G., Candidate of Medical Sciences, First Moscow Medical Institute imeni I. M. Sechenov

[Abstract] In recent years, organic compounds of tin have been finding ever increasing application in various sectors of the Soviet economy. In this report, results of a hygienic study of dibutyl stannous oxide (DSO) and bis (tributyl stannous) oxide (TBSO) are presented with the aim of standardizing their content in the water of reservoirs. The high toxicity and cumulative properties of the two compounds are shown, as well as their biological activity which is manifested in inhibition of the biological oxygen intake. The maximum permissible concentrations of the alkyl stannous oxides in the water of reservoirs are presented on the basis of the sanitary-toxicological index of harmfulness. Table 1.

USSR

UDC 614.37:[621.789-986:547.221

HYGIENIC PROBLEMS OF SAFETY IN THE USE OF FLUORINE HYDROCARBON PROPELLANTS IN AEROSOL PACKINGS FOR DOMESTIC USE

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 2 Feb 76 pp 22-25

BULGAKOV, V. V., candidate of medical sciences, and SLOBODSKOY, D. S., Kiev Scientific Research Institute of General and Communal Hygiene imeni A. N. Marzeyev

[Abstract] Consideration is given to literature data and to the authors' own research with regard to the toxicity of some fluorine hydrocarbons, as well as of their mixtures with dimethyl ether, methylene chloride, vinyl chloride, propane, and bromine hydrocarbons used as propellants in aerosol packings. The hygienic requirements are established, and recommendations are given concerning their safe application in aerosol packings for domestic use. It is shown that with respect to their toxicity, all the tested fluorine propellants belong to the low-toxicity classification and, with the exception of mixtures containing vinyl chloride, may be used as propellants in aerosol packings for domestic use. Table 1; references 8: 2 Russian, 6 Western.



USSR

UDC 615.9:632.95].015.46

INTERRELATIONSHIP OF INDICES OF NATURAL BODILY RESISTANCE IN CHRONIC INTOXICATION BY CHLOROPHOS, POLYCHLORPINEN, AND SEVIN

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 8 Dec 75 pp 25-28

OLEFIR, A. I., candidate of medical sciences, MINTSER, O. P., doctor of medical sciences, and SOVA, R. YE., candidate of medical sciences, Kiev Scientific Research Institute of Labor Hygiene and Occupational Diseases

[Abstract] The problem of determining the features of repeated action of pesticides of various chemical groups upon the interrelationship of factors of nonspecific immunity is presented, and the ascertained changes are correlated with stages of the adaptation process. The effect of prolonged administration of chlorophos, polychlorpinen, and sevin in a dose of 1/20 LD<sub>50</sub> into the stomach of rats, upon the interaction of indices of nonspecific immunity, was investigated. It was found that the dynamics of paired coefficients and multiple correlation of immunologic tests make it possible to assess the terms and length of various stages of the adaptation process or the predominance of the effect of toxic action. Figure 1; table 1; references 7: 6 Russian, 1 Western.

USSR

UDC 614.72:547.412.63

DETERMINATION OF PERCHLOROETHYLENE AND TRICHLOROETHYLENE IN AIR BY THE METHOD OF GAS-LIQUID CHROMATOGRAPHY

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 28 Jul 76 pp 57-58

KUCHINSKIY, A. L., Mogilevskaya Oblast Sanitary Epidemic Station

[Abstract] Conditions for the separate gas-chromatographic determination of trichloroethylene and perchloroethylene have been developed, with account taken of the selective sensitivity of constant-rate recombination detectors to halogen-containing organic compounds. The procedure has been tested under production conditions. References 3 (Russian).

USSR

UDC 614.72-074-7

#### DEVICE FOR SELECTING AIR SAMPLES

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 pp 58-60 manuscript received 24 May 76

RYABTSEV, B. I., Candidate of Medical Sciences, Kiev Scientific Research Institute of Labor Hygiene and Occupational Diseases, Ukrainian Machine-Testing Station, Kiev

[Abstract] With the aim of avoiding the drawbacks of conventional aspirators for selecting air samples, a device has been proposed with two parallel-connected aspiration branches, a rotameter in each branch being series-connected to the flow stimulator via the absorber and the general rarefaction chamber. In the proposed device not only has a substantial decrease of random errors been attained, but systematic rotameter-indication errors have also been avoided, since the penetration of the rotameter by aggressive vapors and aerosols of the absorbing media has been prevented. The presence of the indicated advantages has been confirmed by comparative tests and by the testing of an experimental specimen. The reading error of the instrument does not exceed +4%; it has been designed for operation in taking air samples on mobile units. Figure 1; reference 1 (Russian).

USSR

UDC 614.777-074:547.1'176.06

#### DETERMINATION OF ORGANIC CHROMIUM COMPOUNDS IN WATER

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 16 Jul 76 pp 60-61

TUMANOV, A. A., doctor of chemical sciences, SHAKHVERDI, N. M., candidate of chemical sciences, SIDORENKO, A. N., and MIKLINA, G. A., Scientific Research Institute of Chemistry attached to the Gor'kiy University imeni N. I. Lobachevskiy

[Abstract] A method has been developed for determining bis-arenic  $\pi$ -complex compounds of chromium in water; this method essentially is based on the fact that the indicated compounds are converted into iodide complexes; these are extracted from the water by chloroform, the chromoorganic compounds are mineralized by a mixture of nitric acid and sulfuric acid, and the chromium is determined spectrophotometrically after reaction with diphenylcarbazide. Table 1; references 3 (Russian).

USSR

UDC 614.7:[546.791+546.841.+546.32].026

# ISOTOPES OF THE URANIUM AND THORIUM SERIES IN THE BIOSPHERE

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 28 Jun 76  
pp 67-71

GRASHCHENKO, S. M., candidate of chemical sciences, DRICHKO, V. F., candidate of biological sciences, POPOV, D. K., candidate of chemical sciences, and SHAMOV, V. P., professor, Scientific Research Institute of Radiation Hygiene, Ministry of Health RSFSR, Leningrad

[Abstract] The source of the appearance of natural radioactive isotopes (NRI) in the biosphere and in the sphere of human economic activity is the earth crust. NRI flows in the biosphere are either controlled or uncontrolled. Uncontrolled NRI flows are accompanying isotopes which are coincidentally handled in the chain of obtaining the basic desired product. A diagram of controlled and uncontrolled NRI flows in the biosphere is presented. A characteristic feature of uncontrolled NRI flows, as concentration branches and as dispersion branches, is their continuous increase, connected with the increase in acquisition of useful minerals, the increase of the concentration factor as a consequence of impoverishment of the raw material with respect to the main product, and with the tendency toward the creation of closed, wasteless cycles of production, the last links of which can apparently be fertilizers and building materials. Figure 1; tables 3; references 21: 15 Russian, 6 Western.

USSR

UDC 613.632.4:546.73

# STUDY OF THE INFLUENCE OF LOW CONCENTRATIONS OF COBALT METAL AEROSOL ON THE BODY OF ANIMALS IN A HYGIENIC EXPERIMENT

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 18 Feb 76 pp 97-98

POPOV, L. N., Moscow Scientific Research Institute of Hygiene imeni F. F. Erisman

[Abstract] It is established by experimental research that an aerosol of metallic cobalt in concentrations of 0.5, 0.05, and 0.005 mg/m<sup>3</sup> exerts an activating effect upon the blood-producing system, brings about a disturbance of the protein and carbohydrate metabolism and of the enzymatic systems of the body, as well as pathomorphological changes in the organs and tissues of experimental animals. References 2 (Russian).

USSR

UDC 612.6.05-06:615.9.036.12-055.1:678.049

LONG RANGE CONSEQUENCES OF THE EFFECT OF CHRONIC POISONING OF ANIMALS BY  
POLYVINYL ACETATE EXTRACTS

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 30 Apr  
76 pp 99-100

SHCHERBAK, B. I., Novosibirsk branch of the Okhrinsk Scientific Research  
Union "Plastpolimer"

[Abstract] A nonplasticized polyvinyl acetate dispersions (PVAD) exerts no influence upon the orienting reaction of the progeny of poisoned male rats. PVAD plasticized by 15% dibutylphthalate does disrupt the orientation reaction in the progeny of the male sex, but has no effect upon progeny of the female sex. Table 1; references 5 (Russian).

USSR

UDC 614.72:678.7

RELEASE OF VOLATILE COMPONENTS FROM A POLYMER MATERIAL

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 27 Apr  
76 pp 103-106

AKSEL'RUBINSHTEYN, V. Z., and NOVITSKAYA, E. I.

[Abstract] The pollution level of the atmosphere in contact with a polymer material depends, among other factors, upon the saturation. It is of practical interest to determine the boundaries within which the concentration or release rate of volatile components is directly proportional to saturation. Such a linear relationship has been observed independently by various authors with respect to various aspects of the influence of saturation upon gas release. Experimental evidence is provided. Butanol and toluene are examined as volatile components. Figures 2; references 8 (Russian).

USSR

UDC 613.63+615.9]:632.95(049.3)

HYGIENE AND TOXICOLOGY OF PESTICIDES

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 p 119

BELYAYEV, I. I., professor, corresponding member, Academy of Medical Sciences USSR [Reviewer]

[Review of book "Gigiyena i Toksikologiya Pestitsidov" by A. P. Shchitskova and R. A. Ryazanova, Moscow, "Meditsina," 1975]

[Abstract] This book generalizes the materials of scientific research conducted by the Moscow Scientific Research Institute of Hygiene imeni F. F. Erisman, as well as the data of Soviet and foreign authors on the hygienic and toxicological assessment of pesticides. The book may be useful not only for practicing physicians of sanitary epidemiological stations, veterinarians and workers in agriculture, but also for personnel of scientific research institutes, and, also, for medical personnel in the field of preventive medicine. Some shortcomings are noted, including a high incidence of typographical errors, but the book is credited with a high rating.

USSR

UDC 615.9:632.95].032.77(049.3)

INTAKE OF PESTICIDES THROUGH THE SKIN AND THE PROPHYLAXIS OF POISONINGS

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 pp 119-120

ROSHCHIN, A. V., professor, and ORDZHONIKIDZE, E. K., candidate of medical sciences [Reviewers]

[Review of book "Vsasyvaniye Pestitsidov Cherez Kozhu i Profilaktika Otravleniy" by Yu. I. Kundiyeu, Kiev, "Zdorov'ye," 1975, 200 pages]

[Abstract] The book contains 9 chapters, and 270 bibliographic references to Soviet and foreign researchers. The author generalizes the material on the toxicity of the most important groups of chemical substances when they enter the body through the skin. Much attention is drawn to the action of organophosphorous compounds based on the author's own research, and to a study of the enzymatic hydrolysis of these compounds.

USSR

UDC 616.988.75-036.21-085.281.8-036.8

STUDY OF THE EPIDEMIOLOGICAL EFFECTIVENESS OF RIMANTADINE DURING AN INFLUENZA A OUTBREAK IN 1975-1976

Moscow VOPROSY VIRUSOLOGII in Russian No 3, May/Jun 77 signed to press 23 Nov 76 pp 295-299

OBROSOVA-SEROVA, N. P., KUPRYASHINA, L. M., SHTUNDERENKO, G. V., CHURKIN, G. S., SEVERIN, YE. A., and GALEGOV, G. A., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] The prophylactic action of rimantadine and its combination with live antiinfluenza tissue peroral type 2B vaccine were studied during an influenza epidemic in January 1975 and one in January 1976 caused by A/Port Chalmers/1/73 and A/Victoria/3/75(H3N2). From January 13 to 27, 1975, 228 people received 50 mg rimantadine daily and 5 ml vaccine weekly (group 1), 157 received rimantadine and placebo vaccine (group 2), 151 received daily placebos and live vaccine (group 3) and 198 received both placebos (group 4). A2/Moscow/4/72 and B/Leningrad/807/70 strains were used in vaccine preparation, which produced an endogenous interferon inducer. In 1976 321 persons received 100 mg rimantadine daily and an equal number received a placebo. Serum samples of patients with influenza in 1975 showed marked increases in antibodies to A/Port Chalmers/1/73, A/Hong Kong/1/68 and A/England/42/72 but not influenza B. A/Port Chalmers was isolated from 53% of the nasopharyngeal washings of patients. The index of effectiveness, calculated from the difference between influenza and respiratory disease rates in experimental and control groups, was highest for group 1, at 3.7, while it was 2.3 for group 2. The sick rates in groups 3 and 4 were identical. Symptoms were less severe in group 1. In 1976, virological and serological investigations showed that the epidemic was due to type A2, 90% A/Victoria/3/75. Rimantadine decreased sick rates 1.8 times in the collective where the outbreak lasted 10 days and 2.4 times where it lasted 5 days, as well as shortening disease duration. The data confirm the dependence of rimantadine effectiveness on influenza or respiratory disease intensity. Rimantadine appears effective during the appearance of new varieties of group A virus. Tables 2; references 6: 5 Russian, 1 Western.

## CERTAIN FEATURES OF THE INFLUENZA OUTBREAK IN ULAN-BATOR IN 1974

Moscow VOPROSY VIRULSOLOGII in Russian No 3, May/Jun 77 signed to press 28 Oct 76 pp 291-294

OBROSOVA-SEROVA, N. P., ISACHENKO, V. I., CHESHIK, S. G., ARSLAN, R., DORDZH, A., ALTANGUYAG, S., KHISHIGDORZH, A., and KUPUL, ZH., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow, Institute of Hygiene, Epidemiology and Microbiology, Ulan-Bator, Mongolian Peoples Republic

[Abstract] Clinical and epidemiological data on the outbreak of influenza in Ulan-Bator in December 1974 to January 1975 and the characteristics of the strains isolated are presented. Viruses were isolated from nasal washings or lungs of children, who died of pneumonia, and cultured on chick embryo. The epidemic began in children and ultimately affected 25% of the population. In hospitalized children, who represented 75% of those hospitalized, symptoms indicated disease of the respiratory pathways and general toxicosis with convulsions in 7% and hemorrhagic syndrome in 9% of the cases. In 93% of hospitalized children, influenza was complicated by pneumonia and respiratory insufficiency. Lethal outcome was most common in children under one year of age, usually occurred in the third to fifth day of the illness, and was most often caused by neurotoxicosis and cerebral edema with pneumonia and tracheobronchitis. Antibody formation to type A viruses was tested in 17 patients from nasal smears and in 34 patients from serum, and showed the greatest increase to the A/Port Chalmers/1/73 variant. Six hemagglutinating agents were isolated, four of which were closely antigenically related to Port-Chalmers, while the others were related to A/Duck/Czechoslovakia/63(Har4Nav1) and were probably transmitted to men from horses. One of the Port Chalmers variants exhibited some antigenic drift. The climate and geographic position of Mongolia may cause its particularly severe involvement in the world epidemic. Table 1; references 4: 2 Russian, 2 Western.

## DISCOVERY OF NATURAL FOCI OF NEWCASTLE DISEASE VIRUS IN THE USSR

Moscow VOPROSY VIRUSOLOGII in Russian No 3, May/Jun 77 signed to press 13 Aug 76 pp 311-316

L'VOV, D. K., SYURIN, V. N., NIKIFOROV, L. P., PORTYANKO, N. V., SAZONOV, A. A., ANDREYEV, V. P., CHUMAKOV, V. M., BELOUSOVA, R. V., KONSTANTINOVA, L. A., ZABIGAYLO, N. M., L'VOV, N. D., MIKHITAR'YANTS, E. A., MYMRIN, N. I., and ZHESMER, V. YU., Institute of Virology imeni D. I. Ivanskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] In 1974 virological study was made of 189 samples from 229 birds from Astrakhan Oblast (AO) and 244 samples from 208 birds from Komandarskiy Island (KI) two tracheal and cloacal washings and 6 visceral pools from 7 birds of the AO, and one visceral pool, 4 tracheal washings and 2 cloacal washings from 12 birds of the KI were found to have hemagglutinating titers. The hemagglutination inhibition reaction showed presence of Newcastle Disease Virus (NDV) and not influenza. In this manner 8 NDV strains were isolated from birds of the AO--4 from *Egretta alba* L., 3 from *Pralacrocorax carbo* L., and one from *Ardea cinerea* L.--and 7 strains from birds of the KI--4 from *Lunda cirrhata*, two from *Uria aalge*, and one from *Larus gluacescens*. This is the first evidence of natural foci of NDV in the USSR. Tables 3; references 28: 4 Russian, 24 Western.



USSR

UDC 576.8.095

BIOCHEMICAL PROPERTIES OF HEMOPHILIC BACTERIA ISOLATED FROM PIGS INFECTED WITH POLYSEROSITIS

Moscow DOKLADY VASKhNIL in Russian No 5, 1977 signed to press 10 Nov 76 pp 42-43

GUMBATOV, YU. K., All-Union Order of Lenin Institute of Experimental Veterinary Medicine

[Abstract] Results of a study of the biochemical properties of 30 cultures of hemophilic bacteria isolated from swine with polyserositis indicated that *H. influenzae* require for their growth V and X factors at the same time as *H. parahaemoliticus*, *H. parasuis* and cultures of hemophiles require only V factor under the same conditions. According to the spectrum of biochemical activity all 30 cultures of hemophilic bacteria isolated during polyserositis in swine are uniform and most closely resemble *H. parasuis*.

USSR

UDC 576.858.73:66.067.3

PURIFICATION AND CONCENTRATION OF CARNIVORE PLAGUE VIRUS

Moscow DOKLADY VASKhNIL in Russian No 5, 1977 signed to press 9 Sep 76 p 22

LIKHACHEV, N. V., academician, MEL'NIKOVA, L. A., doctor of medical sciences, NIKOLAYEVA, N. P., candidate of veterinary sciences, PROKHOROVA, E. M., candidate of veterinary sciences, and SELIVANOV, A. V., doctor of veterinary science, All-Union State Scientific Control Institute of Veterinary Preparations

[Abstract] Analysis of the sedimentation properties of carnivore plague virus (Strain KF-668) by use of a combination of differential centrifugation and ultracentrifugation showed the coefficient of sedimentation to be 80 S. Purification and concentration of the virus increased the infectiousness of the preparation obtained by 2 lg and greatly improved the purity in comparison to the initial material. Figure 1; reference 1 (Western).

USSR

UDC 576.858.25.083.35

PERSISTENT INFECTION OF PIG EMBRYO KIDNEY CELL CULTURES WITH A VARIANT OF  
TICK-BORNE ENCEPHALITIS VIRUS

Moscow VOPROSY VIRUSOLOGII in Russian No 3, May/Jun 77 signed to press 3 Aug  
76 pp 274-278

GAVRILOV, V. I., deceased, CHEREDNICHENKO, YU. N., DERYABIN, P. G., and  
ZHDANOV, V. M., Institute of Virology imeni D. I. Ivanovskiy Academy of Medi-  
cal Sciences USSR, Moscow

[Abstract] The formation and tendency to persistence of tick-borne encephali-  
tis (TBE) infections in pig embryo kidney (PEK) cell cultures elicited by a  
TBE transfection variant MF were studied using DEAE dextran ten minutes after  
introduction of virus or DNA to the cell monolayer. Some cell degeneration  
was observed before the 145th day of the experiment, with periods of mild de-  
generation and repopulation alternating. The persistent virus isolated from  
culture fluids during degeneration retained sensitivity to 4M urea and RNAase,  
while cell thermolysate homogenate viruses were sensitive only to RNAase.  
Neither reversion to pathogenicity in mice nor interferon in the PEK-TBE sys-  
tem were found. Indirect immuno-fluorescence revealed TBE antigen in 3-5% of  
the chronically infected cells. Inoculation of normal cell cultures with DNA  
from a PEK-TBE system yielded destruction of the normal cells. Treatment with  
DNAase or alkaline hydrolysis destroyed this effect, while RNAase, pronase or  
specific antisera to TBE did not. The results support the concept that chronic  
infection in PEK-TBE systems proceeds via integration of the viral genome into  
cell DNA. Figure 1; tables 2; references 12: 7 Russian, 5 Western.

USSR

UDC 616.988.75-022.1-092.9

EXPERIMENTAL INFECTION OF CALVES WITH INFLUENZA A/CALF/UDMURTIA/116/73

Moscow VOPROSY VIRUSOLOGII in Russian No 3, May/Jun 77 signed to press 26 Oct  
76 pp 285-287

SMETANIN, M. A., MOLIBOG, YE. B., BOROVIK, R. V., ZAKSTEL'SKAYA, L. YA., and  
ISACHENKO, V. A., Kazan Veterinary Institute imeni N. E. Bauman; Institute of  
Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] Results of experimental infection of calves with strain A/Calf/  
Udmurtia/116/73 influenza virus, which was isolated in 1973 from a calf which  
had to be killed during a calf influenza epidemic, are reported. This strain  
has the hemagglutinin of strain A/HongKong/1/68 and the neuraminidase of  
strain A/Port Chalmers/1/74. The Udmurtia virus interacts with antibodies to  
A/England/42/72 and A/Port Chalmers/1/73 but not A/Singapore (g2n2). Three  
12 month old and two 2 month old calves were infected with virus which had  
undergone 13 passages on chick embryo culture, by the intranasal method. All

the animals and one in contact with them became ill with temperatures of 40.0-40.5°, accelerated breathing and pulse. After one to four days a second fever period of temperatures of 40.5-42° with copious nasal discharge was observed. Virus was recovered from the blood of the calves in the first seven days after infection, while antihemagglutinins appeared from day five to day seven and increased, to day 20. Antineuraminidase accumulated much slower and to only a small degree. Figures 2; references 5: 4 Russian, 1 Western.

USSR

UDC 65.011.56:628.356.3

#### USE OF AUTOMATED RESPIROMETERS FOR RESEARCH ON PROCESSES OF BIOCHEMICAL PURIFICATION

Moscow VODOSNABZHENIYE I SANITARNAYA TEKHNIKA in Russian No 5, 1977 pp 9-12

KULIKOV, A. I., engineer, and SMIRNOV, D. N., doctor of technical sciences, VNII VODGEO [All-Union Scientific Research Institute of Water Supply, Sewer Systems, Hydraulic Engineering Structures, and Engineering Hydrogeology]

[Abstract] The first automated respirometers were the contact type with three culture vessels. A modification, AKR-1V was designed by the VNII VODGEO jointly with the Agropribor Scientific Production Association and the Special Design Office for Biological Instrument Building, Academy of Sciences USSR. It consists of 3 independent measuring systems. Each fermenter has a volume of 2 liters. The electrolyzer has a maximum productivity of 1,500 mg of oxygen per hour, a continuous automatic registration of oxygen demand. Its maximum resolution is 0.1 mg of O<sub>2</sub> per liter. Its main advantage is the combination of high oxidation capacity and high resolution. This is attained through original design of the electrolyzer and efficiently built measurement systems. The use of this instrument in the study of purification installations at a chemical combine and a city waste water plant demonstrates its advantages. Its ability to register the rate of oxygen demand is useful in accurately describing the stages of the operation. Two graphs display the processes. An experiment at the city facility studied the influence of toxic substances (heavy metals) on the rate of oxygen demand. This type of respirometer could be used in research and production laboratories. It should be manufactured domestically. Experience in its design and application will facilitate rapid mastery of its production. Figures 3; references 5: 1 Western, 4 Russian (One describing Hungarian respirometer).

USSR

UDC 576.809.31

ISOLATION FROM LATVIAN WATER RESERVOIRS OF MICROORGANISMS WHICH DECOMPOSE  
EXOGENOUS LOW-MOLECULAR WEIGHT COMPONENTS OF NUCLEIC ACIDS

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 13 No 1, Jan/Feb  
77 signed to press 14 May 76 pp 134-138

LISHMANE, A. YA., and VITOLS, M. YA., Latvian State University, Riga

[Abstract] Bacteria collected in reservoirs of the Latvian USSR were cultured on various synthetic media which contained, as the only sources of carbon and nitrogen, 10 different purine and pyrimidine compounds and their derivatives (bases, nucleosides, RNA). Of the isolated bacteria, 87% belonged to the genus *Pseudomonas*. Eight cultures were isolated in media where caffeine served as the only source of nitrogen. Forty-seven species and strains were studied in all. Figures 2; tables 3; references 6: 3 Russian, 3 Western.

USSR

UDC 576(356 + 357):591.3

MICRONUCLEI AND CYTOGENETIC DISTURBANCES IN MOUSE EMBRYOS BEFORE IMPLANTATION

Kiev TSITOLOGIYA I GENETIKA in Russian Vol 11 No 1, Jan/Feb 77 signed to press 17 May 76 pp 17-22

TITENKO, N. V., and YEVSikov, V. I., Institute of Molecular Biology and Genetics, Academy of Sciences Ukrainian SSR

[Abstract] One of the special features distinguishing the liver sinusoid from other blood-carrying capillaries is the formation of its cells, which are clearly heterogeneous in the functional sense. These come in contact with the hepatocytes through Disse's space--a fact leading to interest in the character of the interaction between the parenchymatous and the sinusoidal elements of the liver. The purpose of the present study was to determine the permeability of the sinusoid walls to materials of various nature, and also to determine the capacity of the walls and hepatocytes for endocytosis. In 3-1/2-day-old mouse embryos the authors observed 4.1% of polyploids, 8.5% of aneuploids and 7.9% of embryos with structural chromosomal aberrations. In addition, 7.6% of the embryos showed micronuclei which had a definite link with the structural aberrations. It is believed that normalization of the embryo genotype in the early stages of embryogenesis occurs through elimination of cells with disruptions, or as the result of the destruction of anomalous embryos during implantation. Figures 4; tables 2; references 12: 5 Russian, 7 Western.

USSR

UDC 577.21

RESISTANCE OF E. COLI TO PHAGE MS2 IN THE COURSE OF INFECTION WITH THIS PHAGE

Kiev TSITOLOGIYA I GENETIKA in Russian Vol 11 No 1, Jan/Feb 77 signed to press 23 Sep 76 pp 3-9

PERERVA, T. P., Institute of Molecular Biology and Genetics, Academy of Sciences Ukrainian SSR, Kiev

[Abstract] It is generally believed that RNA-containing phages are not capable of direct interaction with the DNA of the cell-host. Nevertheless, such interaction is indirectly indicated by the quick acquisition of resistance to such phages by a portion of the cells of an infected phage-sensitive population. It may be assumed that in the case of RNA-containing phages the basic cause of the accumulation of resistant forms is the selection of already existing F<sup>-</sup> cells, although experimental proof of this possibility is so far lacking. The author studied resistance to the phage MS2, which appears with great frequency in Hfr cultures in the process of phage infection, considering the question of whether such resistance is due to selection of pre-existing F<sup>-</sup> cells, or is a phage-induced change which damages the genetic information

of the cell. Phage MS2 and a culture of *E. coli* AB 259 Hfr 3000, with culture media of meat-peptone agar (1.8% and 0.8%) and meat-peptone broth, were used in the experiments. It was found that multiplication of the phage in a sensitive cell was accompanied by the induction of phage-resistant forms in the cell's descendants. It is concluded that this phenomenon is not associated with the selection of pre-existing F<sup>-</sup>-cells, but is clearly owing to direct interaction of the phage products with episomal DNA which codes the protein of the sexual fimbriae. Figure 1; tables 3; references 24: 2 Russian, 22 Western.

USSR

UDC 576.858.5.086.86

RESTRICTION AND LIGATION OF SIMIAN ADENOVIRUS TYPE 7 DNA USING RESTRICTING ECO RI ENDONUCLEASE AND DNA-LIGASE

Moscow VOPROSY VIROSOLOGII in Russian No 3, May/Jun 77 signed to press 20 Jul 76 pp 271-274

KISLINA, O. S., NARODITSKIY, B. S., CHAPLYGINA, N. M., KARAMOV, E. V., TIKHONENKO, T. I., DREYZIN, R. S., ZOLOTARSKAYA, E. YE., ANDRIANOV, V. M., and VINETSKIY, YU. P., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Institute of General Genetics, Academy of Sciences USSR, Moscow

[Abstract] Optimal conditions for ligation of simian adenovirus type 7 (SA-7) DNA by Eco RI endonuclease were studied using agarose gel electrophoresis and lambda-III DNA phage to confirm infectiveness of ligated material. Eco RI fragmentation gave two ethidene bromide stainable bands of molecular weights 10.8 and 12.4 x 10<sup>6</sup> daltons, while ligation after restriction gave three, with the third corresponding to the migration of intact DNA. However the fact that samples were heated to 65° before electrophoresis excludes the presence of non-covalently ligated DNA molecules. Scanning densitometry gave one peak with a pronounced shoulder for restricted material and a second peak at the position of intact DNA for the ligate. This indicates that about 30% of the starting material was transferred to intact DNA molecules. The lambda-III phage DNA fragment mixture had practically no transfection capacity, while ligated DNA phage mixes had about 10% of that of intact DNA phage mixes. Figures 3; table 1; references 9: 2 Russian, 7 Western.

USSR

UDC 612.822.1

ACTIVITY OF ACID RNAase OF LYSOSOMES OF VARIOUS SECTORS OF THE BRAIN OF RATS DURING TRAINING

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 63 No 4, Apr 77 signed to press 24 Jan 76 pp 489-495

ASHMARIN, I. P., DEMIN, N. N., LOPATINA, N. G., and NECHAYEVA, G. A., Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR; Department of Biochemistry, State University, Leningrad

[Abstract] A conditioned defense reflex was produced in rats of the Wistar and the Krushinskiy-Molodkina strains. Development of this (escape) reflex is accompanied by an increase of activity of acid RNAase (possibly, increased content) in the lysosome cells of the large hemispheres and, at the same time, by an increase in resistance of the membrane of the lysosomes to the action of histones; this hampers the exit of this catabolic enzyme from lysosomes in vitro. Perhaps the training is accompanied by a decrease in possibility of RNA cleavage in the cytoplasm of the corresponding cells. The authors point out that the production of a conditioned reflex of passive escape leads to a decrease, precisely in the cortex of the large hemispheres, of activity of acid proteinase, which indicates some repression of the catabolic processes. Demin earlier (1974) indicated that increase in resistance of lysosome membranes (based on decrease in exit of acid RNAase) can be induced by acetylcholine and serotonin. It is possible that, under the conditions of a developed conditioned reflex, the condition of the lysosomes might be affected by the substances cited, whose metabolism changes with shifts in the functional state of the venous system. Tables 4; references 16: 11 Russian, 5 Western.

USSR

UDC 612.822.3+612.826

REACTIONS OF NEURONS OF THE SUPERIOR OLIVARY COMPLEX OF THE HORSESHOE BAT TO AMPLITUDE-MODULATED SIGNALS

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 63 No 4, Apr 77 signed to press 15 Sep 76 pp 496-503

ANDREYEVA, N. G., and VASIL'YEV, A. G., Department of Physiology of Higher Nervous Activity, State University imeni A. A. Zhdanov, Leningrad

[Abstract] Experiments were done, by a method earlier described by Vasil'yev (1976,1971), on 20 large horseshoe bats. Amplitude-modulated (AM) stimuli were produced by a G-4-42A generator; source of external modulation was a G3-7A generator. Frequency and coefficient of modulation were changed within a wide range. Frequency of charging and modulation was controlled by a CH3-35A frequency meter-chronometer at a time of measurement equal to 1 sec. Duration of stimuli was usually 25 msec, and, at low frequencies of modulation, 50 msec. Determination of the synchronization reaction was done both

visually and by recording on a film. In a number of tests, control of the position of the microelectrode tip was done by the Galifret, Szabo method (1960). Synchronized reactions of the neurons were revealed with position of the electrode in the pre-olivary nuclei or in the ventral sectors of the sigmoid segment. The reactions of 160 neurons of the title complex to AM stimuli were tested. Eighty-five reacted to presentation of the signals by synchronization of their discharges in correspondence with the AM stimulus envelope. Areas of synchronization were arranged, as a rule, within the areas of responses to monochromatic stimuli. The best frequency of synchronization reaction corresponds to the characteristic frequency of the neuron. The majority of neurons synchronize the discharges in a range of frequency of modulation from 100 to 800 Hz. Maximum and minimum frequencies of modulation were equal to 1200 and 50 Hz, respectively. The precision of the synchronization reaction is a function also of the coefficient of modulation and level of intensity of the stimulus. Figures 5; references 16: 13 Russian, 3 Western.

USSR

UDC 612.8.08

#### METHOD FOR MULTIPLE RECORDING OF THE ACTIVITY OF NEURONS IN ALERT MONKEYS

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 63 No 4, Apr 77 signed to press 1 Jun 76 pp 600-602

PIROGOV, A. A., and ORLOV, A. A., Department of Physiology of Higher Nervous Activity, Leningrad University

[Abstract] The disadvantages of bunched conductors inserted into the intact brain, and their fastening to the skull, prompted the authors to devise their own procedure for examination of neuronal activity. The procedure is said to meet the following demands: i) rapid exploration of 3 and more active neurons within one or several areas of the primate brain; ii) extended, hours to days, reading of the activity of these neurons; iii) possibility for replacement of an electrode bunch without an additional surgical operation; iv) interchange of areas of examination of the brain in one and the same animal; v) possibility of releasing the animal after conduction of a series of experiments, thus, there is no need for the continuous retention of the animal in its "reserved seat." The electrodes (6-8) are insulated with refluon, or stainless steel, tungsten, platinum, or gold, and are 50 mcm in diameter. A figure and diagrams illustrate the technique of attaching the electrodes to the skull. Examples are given of recordings of tappings. The procedure is said to be suitable for use with monkeys when the above cited features are demanded. Figures 2; references 12: 3 Russian, 9 Western.



## METHOD FOR MICROIONTOPHORETIC STUDY OF THE CHEMICAL CHARACTERISTICS OF CORTICAL NEURONS IN ANIMALS IN UNRESTRAINED ANIMALS

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 63 No 4, Apr 77 signed to press 25 May 76 pp 602-605

ANDRIYANOV, V. V., ZAKHAROV, N. D., and FADEYEV, YU. A., Department of Normal Physiology. First Moscow Medical Institute imeni I. M. Sechenov; Scientific Research Institute of Normal Physiology imeni P. K. Anokhin, Academy of Medical Sciences USSR, Moscow

[Abstract] Use of microiontophoresis to study the chemical character of post-synaptic membranes of brain nervous cells has usually involved narcotized animals; technical difficulties of such study in freely-moving animals relate to the construction features of the micromanipulators used. The present article describes further modification of a micromanipulator which can thus be used with a multi-channel microelectrode under conditions of free behavior of the test animals. The modified micromanipulator is 2.5 mm high; its body is fitted with a spherical lower section of duralum. At the time of an experiment the manipulator is set into a steel socket and fastened to it with three screws. The upper part of the manipulator has a disc of ftoroplast with a 0.5 mm threading. Within the body of the manipulator is a steel rod with an external threading the same as that of the disc, with guiding screws. Within the moveable rod is an aperture into which is placed a glass multi-channel (4 to 5) microelectrodes, fastened with a set screw. The steel socket is fitted with a screw thread on its under surface. The socket is screwed into a prepared receptacle on the skull of an animal (cat), and with the attached micromanipulator the electrode can be angled into various cerebral structures. Neuronal activity is recorded by a technique earlier described (Sherstnev 1973; Tasaki, 1961). Biologically-active substances (acetylcholine, noradrenaline, serotonin) can be introduced through other channels of the multi-channel glass microelectrode with the help of the device for microiontophoresis. The authors believe the device is suitable for study of the sensitivity of nervous cells of the brain under conditions close to the natural state. Figures 4; references 9: 6 Russian, 3 Western.

USSR

UDC 616-006.6-092:611-018.54

HEXOKINASE ACTIVITY IN BLOOD SERUM DURING CARCINOGENESIS

Leningrad VOPROSY ONKOLOGII in Russian Vol 23 No 1, 1977 pp 45-48

KIL'DEMA, L. A., candidate of medical sciences, Institute of Experimental and Clinical Medicine, Ministry of Health, Estonian SSR

[Abstract] Previous studies by S. A. NEYFAKH (1963, 1967) showed the presence of hexokinase (HK) in the blood of animals suffering from malignant tumors. The present study was to observe HK activity in the blood serum of Wistar rats during diethylnitrosamine (DENA)-induced carcinogenesis. This carcinogen was administered to test animals in drinking water (2.5 mg/kg body weight) 6 times a week for 8 months, an individual set of animals being segregated at the end of each month for testing HK activity in blood serum and liver tissue. The activity was determined spectrophotometrically on the basis of nicotinamide-adenine-dinucleotide restoration. In 4 out of 7 test animals, HK was present in the blood system beginning with the 5th month, when the first signs of tumor formation had appeared; and in the great majority of animals (21/24) it was present from the end of the 6th month. HK activity increased in liver tissue in the early months, normalized by the 4th month, but had risen to twice the control level by the end of the test period, when hepatomas were already present. It is believed that any rise in HK activity in liver tissue, or the presence of HK in blood serum, can be regarded as an early biochemical sign of tumor formation. Figure 1; table 1; references 14: 9 Russian, 5 Western.

USSR

UDC 616-006.6-092

DETECTION OF 3-OAA (TRIOXYANTHRANILIC ACID)-CONTAINING ANTIGENS IN THE EARLY STAGES OF CARCINOGENESIS

Leningrad VOPROSY ONKOLOGII in Russian Vol 23 No 1, 1977 pp 41-45

KOROSTLEVA, T. A., and SHVAYDETSKIY, I. I., Scientific Research Institute of Oncology imeni Petrov, Ministry of Health USSR, Leningrad

[Abstract] High-sensitivity immunological methods have already been used to demonstrate the features of the binding of exogenous and of endogenous carcinogens by the proteins of a tissue-target, and also the presence of an antigen containing 3-OAA in the blood serum of urinary bladder cancer patients (1971). Such binding figures prominently in a number of phenomena leading to malignant degeneration. The present study was aimed at further investigation of 3-OAA-antigens circulating in the body during the early stages of induced carcinogenesis. The specific action of dimethylaminoazobenzene (DAB) and some noncarcinogenic compounds was studied. It was found that DAB produces

damage similar to that resulting from the action of the 3-OAA-antigens, this being associated with disruption of aminoacid (tryptophan) metabolism. Figures 3; tables 2; references 7: 4 Russian, 3 Western.

USSR

UDC 616-006.6-092:547.545

#### ENDOGENIC SYNTHESIS OF THE N-NITROSO COMPOUNDS

Leningrad VOPROSY ONKOLOGII in Russian Vol 23 No 1, 1977 pp 99-106

IL'NITSKIY, A. P., and VLASENKO, N. L., Oncological Scientific Center, Academy of Medical Sciences USSR

[Abstract] The intraorganismal synthesis of the carcinogenic N-nitroso compounds from their precursors (nitrites, nitrates, secondary and tertiary amines, amides) is a subject of great theoretical and practical importance, since there is great practical risk of the ingestion of such precursors from the environment, food products, industrial waste water, etc. The authors survey briefly the situation regarding peroral ingestion and the possibilities of bacterial production of these precursors; also the chances of reservoir contamination. Detailed data on the possible organismal synthesis of 13 nitrosamines and 15 nitrosamides (experimental data of 1971) are given; also on such synthesis of 18 other N-nitroso compounds. All data, from various investigators, relate to peroral ingestion, and respiratory ingestion is not considered in detail. A useful bibliography reflecting experimental data obtained since 1970 is included in the paper. Tables 2; references 36: 1 Russian, 35 Western.

USSR

UDC 591.481 + 612.018 + 575.113

#### HYPOTHALAMUS STIMULATION AS A CAUSE OF VARIATION IN THE GENETIC ACTIVITY OF THE LIVER CELLS OF THE RAT

Kiev TSITOLOGIYA I GENETIKA in Russian Vol 11 No 1, Jan/Feb 77 signed to press 30 Dec 75 pp 34-37

MASYUK, A. I., TYULENEV, V. I., BERDYSHEV, G. D., BEZDROBNYY, YU. V., TRON'KO, N. D., SLOBODYAN, M. M., and PERETYATKO, T. I.; Kiev State University and Kiev Scientific-Research Institute of Endocrinology and Metabolism

[Abstract] The study was conducted with use of male Wistar rats subjected to electrical stimulation of the hypothalamus. It was found that the genetic response of the animals' liver cells to these stimuli, differs from the response to exogenic steroid hormone. Since corticosterone and hydrocortisone are not

complete analogs, the data obtained were regarded as an indirect indication that the mechanisms involved in the regulation of transcription in the liver cell nuclei upon hypothalamus stimulation, and upon administration of the steroid hormone, are different. It is concluded that hypothalamic action on liver cells is neural rather than hormonal in character. This is indicated by data obtained on liver denervation. Figures 2; tables 4; references 12: 5 Russian, 7 Western.

USSR

UDC 575.1

THE USE OF ALLIUM FISTULOSUM L. SEEDS AS A PRELIMINARY TEST IN THE STUDY OF ENVIRONMENTAL MUTAGENIC FACTORS

Kiev TSITOLOGIYA I GENETIKA in Russian Vol 11 No 1, Jan/Feb 77 signed to press 27 Aug 75 pp 62-65

ZOLOTAREVA, G. N., ISKHAKOVA, E. N., and OBLAPENKO, N. G., Scientific-Research Institute for the Biological Testing of Chemical Compounds, Kupavna, Moskovskaya Oblast

[Abstract] Study of the mutagenic action of medicinals calls for the selection of a particular set of research methods which will reveal various categories of mutations and at the same time offer economical and speedy compilation of a list of remedies deserving priority attention. The method of quantitative evaluation of aberrant anaphases of *Allium fistulosum* L., which is extremely simple in use, highly recommends itself in this connection.

The authors studied 14 psychotropic and tranquilizing preparations now in wide clinical use. Those in tablet form were dissolved in dimethyl sulfoxide (except the water-soluble Aminoazinum) and applied to seeds of *Al. fistulosum* L., using the anaphase method to determine chromosomal aberrations. Significant mutagenic effect was produced by Benzonalum, Carbamazepinum and Chlórdiazepoxidum, indicating that these should receive extended testing on animals. Detailed data on the mutagenic effects of the other preparations are given. Table 1; references 2 (Russian).

USSR

REGULATION OF THE PERMEABILITY OF PLEURA DURING HIGH FREQUENCY INDUCTOTHERMIA

Kishinev IZVESTIYA AKADEMII NAUK MOLDAVSKOY SSR in Russian No 1, 1977 signed to press 8 Feb 77 pp 68-72

GUSKA, N. I., FAYTEL'BERG-BLANK, V. R., RAKHMAN, F. I., and YERIZA, YU. V.

[Abstract] Chronic and acute experiments on 91 cats showed that inductothermia currents of 200 mA and injection of caffeine, chlorohydrate, aminazin or barbamyil lessened P<sup>32</sup> absorption by the pleura under the changed functional state of the cerebral cortex and the subcortical nerve centers. Data of the experiment indicated that the cerebral cortex, the reticular formation and other subcortical nerve centers play an essential role in the effect of inductothermia on pleural absorption but the effect differs for different structures of the central nervous system. Figures 2; references 14: 11 Russian, 3 Western.

USSR

UDC 547.962.3:541.124/128

RAISING THE REACTIVE CAPABILITY OF ALBUMIN BY CHEMICAL MODIFICATION OF ITS AMINO GROUPS

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 13 No 1, Jan/Feb 77 signed to press 6 Apr 76 pp 91-96

PSHENICHNAYA, L. N., and TUKACHINSKIY, S. YE., Leningrad Scientific Research Institute of Hematology and Blood Transfusion

[Abstract] The problem of prolonging the effect of a number of pharmacologically-active substances is at the present time being resolved on the basis of employing various synthetic compounds (notably polyvinyl pyrrolidone) as carriers. However, experience in clinical use of such preparations shows that they produce complications in connection with inability of the organism to metabolize the synthetic carrier. Interest in the use of natural macromolecular compounds (proteins) for this purpose has been correspondingly stimulated. The authors studied the effect of acetylation and succinylation on the physico-chemical properties of albumin. It was found that, as a result of the modification of the amino groups of albumin, its complex-forming capability was increased, in a degree depending on the character of the modification. Graphic illustrations of the results of the study are given. Figures 3; references 11: 3 Russian, 8 Western.

USSR

UDC 612.35.017.2:612.014.4

MORPHOLOGICAL FEATURES OF PROCESSES OF LIVER ADAPTATION TO THE ACTION OF SOME  
CHEMICAL SUBSTANCES

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 30 Apr 76  
pp 45-50

BONASHEVSKAYA, T. I., Academy of Medical Sciences, Institute of General and  
Communal Hygiene imeni A. N. Sysin, USSR, Moscow

[Text] Adaptation processes in rat liver to the experimental action of a number of organic substances are analyzed by means of histofermentative research methods. The studied substances, their concentrations and doses, as well as the means of their entry into the body, are presented. It is noted that stereotyped reactions of a structural and metabolic nature occur in the liver in response to chemical exposure independently of the specific features of the organic substances and the ways of their administration. Figure 1; table 1; reference 1(Russian).

USSR

UDC 615.9.07

QUANTITATIVE TOXICOLOGICAL ASSESSMENT OF POISONS IN A HUMAN CELL CULTURE

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 3 Jun 76 pp 50-53

SHPIRT, M. B., candidate of medical sciences, Kirgiz Scientific Research Institute of Epidemiology, Microbiology, and Hygiene, Frunze

[Abstract] A quantitative toxicological assessment of the action of a substance on humans cannot be made on the basis of its action on cells of undifferentiated warm-blooded animals, since adaptational and protective-compensatory functions and mechanisms level off the influence of the substance in the body. It is proposed that a body-cell coefficient (BCC) be introduced to assess the quantitative value of the above-mentioned functions and mechanisms. The BCC is determined according to the formula:

$$BCC = \frac{LD_{50awba}}{LD_{50ahc}},$$

in which  $LD_{50awba}$  is the average lethal dose of the investigated compound in an acute experiment for a warm-blooded animal, and  $LD_{50ahc}$  is the average lethal dose of the same substance in an acute experiment for a human cell culture; and

$$DCC = \frac{CC_{wb}}{CC_{hc}},$$

where  $CC_{wb}$  is the cumulation coefficient of the investigated compound for a warm-blooded animal, and  $CC_{hc}$  is the cumulation coefficient of the same substance for a human cell culture. The significance of the BCC value is discussed. References 10 (Russian).

USSR

UDC 612.58+612.273

RESISTANCE OF TISSUES AND CELLS IN RATS ADAPTED TO HYPOXIA, DEEP HYPOTHERMIA AND HYPERCAPNIA

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 63 No 4, Apr 77 signed to press 1 Jul 76 pp 577-581

AKOYEVA, G. N., KOROSTOVTSEVA, N. V., CHERNIKOVA, YE. D., and ZALKIND, L. G., Central Scientific Research Laboratory, Pediatric Medical Institute, Leningrad

[Abstract] One of the effective methods to increase resistance of the warm-blooded body to hypoxia and deep hypothermia is preliminary, one-time or repeated, cooling in conjunction with changes in the gaseous environment--progressive increase in CO<sub>2</sub> concentration and decrease in O<sub>2</sub> content. Despite extensive research, the reason for this increase remains obscure. The present research has attempted to clarify the picture at the tissue and cellular level in rats. Chilling (to 2-4°) of the animals under conditions of a changed gaseous environment, one-time and, especially, repeatedly, leads to rise in resistance of the body to hypoxia, to deep hypothermia, and to hypercapnia, and, also, to increase in resistance of the tissue and cellular structures within 2-4 hours. It caused an increase in the osmotic resistance of the erythrocytes and a decrease in absorption of a dye by brain and muscular tissues. The occurrence of this picture, regarded as a general, non-specific component of adaptive reactions, indicates the general biological character of the restructuring, and justifies considering it as an adaptation, despite its rapid appearance. Tables 3; references 16 (Russian).

USSR

UDC 612.17

REACTION OF THE HEART TO FUNCTIONAL LOADING OF RATS ADAPTED TO PHYSICAL LOADING

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 63 No 4, Apr 77 signed to press 28 May 76 pp 597-599

KAPEL'KO, V. I., and GIBER, L. M., Laboratory of Pathophysiology of the Heart, Institute of General Pathology and Pathophysiology, Moscow

[Abstract] This report describes a study of activity of the rat heart in situ under a functional load, viz., an increase in frequency of contraction. Rats, trained to run in a treadmill, were run for 45 min a day for 6 weeks, at a speed, in the first 3 weeks, of 10 to 19 M/min. This training did not evoke any reliable changes in ventricle weight. Increase in contraction frequency was achieved by electrical stimulation of the right auricle, up to appearance of pronounced alteration. Indices of the contractive functions examined included frequency of contraction (in min), pressure generated by the ventricle,



index of intensity of contractive function ICF (mm Hg/min) (Note: the ICF is the arithmetical product of systolic pressure times contraction frequency), maximum rate of development of pressure, index of contractility, maximum rate of drop of pressure, index of relaxation, duration of diastolic pause (percent of total duration of the cycle). In the authors' experiments the ICF was the integrative index of work of the ventricle; the dynamics of this index, in an increase of frequency, correlate well with the dynamics of absorption of oxygen. The difference in the ICF of the myocardium of adapted and of control animals sharply increases under the influence of the functional loading with increased contraction frequency. The basic cause of the rise in the ICF of hearts of adapted animals involves presence in them of more stable pressure, of the speed of its development and fall. The maximum speed of development of pressure at a frequency of 470/min was increased in the hearts of the adapted animals, by a factor of 2.8 as compared with the control value at the same frequency, and the maximum speed of pressure drop, by a factor of 2.2. The authors indicate that the physiological meaning of the adaptive changes consists in an increase in the maximum pumping function of the heart, not an increase in maximum developing pressure. Figure 1; references 14: 4 Russian, 10 Western.

USSR

UDC 616.124-009.3-092.9-07

#### PARALLEL STUDY OF THE THRESHOLDS OF VENTRICULAR FIBRILLATION AND EXCITATION

Moscow KARDIOLOGIYA in Russian No 4, 1977 signed to press 5 Jul 76 pp 111-116

TITOV, V. N., and SHARGORODSKIY, B. M., Institute of Cardiology imeni A. M. Myasnikov, Academy of Medical Sciences USSR, Moscow

[Abstract] The article describes an apparatus and method for measuring the thresholds of ventricular fibrillation under conditions of the natural sinus rhythm and then comparing them with changes in myocardial excitability during the cardiac cycle (force-interval curve) induced by the administration of lidocaine and propranolol. Experiments on cats showed that the thresholds of ventricular fibrillation found by stimulating the heart with short (10 msec) or long (100 to 300 msec) impulses were practically identical. Intravenous injection of lidocaine (4 mg/kg) elevated the threshold of fibrillation without changing the projection of the stimulus that caused fibrillation onto the force-interval curve which shifted downward and to the left; it increased myocardial excitability at the same time. Intravenous injection of propranolol (1 mg/kg) elevated the threshold of fibrillation, causing a simultaneous shift upward and to the right in the projection of the stimulus onto the force-interval curve and decreasing myocardial excitability. Figures 3.

USSR

SOME CHARACTERISTICS OF THE WATER REGIME OF WINTER WHEAT DAMAGED BY ROOT ROT

Kishinev IZVESTIYA AKADEMII NAUK MOLDAVSKOY SSR in Russian No 1, 1977 signed to press 8 Feb 77 pp 8-11

KUMPENE, A. G., and GRINBERG, Sh. M.

[Abstract] A study of Odessa 51 variety and Caucasus variety of winter wheat, artificially infected by a mixture of *Fusarium* fungi, revealed that: in all stages of development of the affected plants the level of total and free water was reduced and the quantity of bound water was increased which led to a reduction of transpiration intensity (greater in the Caucasus variety) and an increase of the water-holding capacity. The study of anatomical and morphological characteristics at different phases of development showed that even a minor infection of individual organs affects the normal development of both varieties. The water regime changed to a greater degree in the Caucasus variety than in the Odessa 51 variety and this, in turn, affected the degree of vulnerability of these varieties to root rot. Figures 3; table 1; references 5 (Russian).

USSR

UDC 616.728.2-007.-02

## SOME ETIOLOGICAL FACTORS IN ANOMALY OF DEVELOPMENT OF THE COXOFERMORAL JOINT

Tashkent MEDITSINSKIY ZHURNAL UZBEKISTANA in Russian No 4, Apr 77 signed to press 14 May 76 pp 26-29

KARIYEV, M. KH., professor, LUZINA, YE. V., and CHACHI, R. B., Department of Military Field Surgery with Traumatology and Orthopedics, Tashkent Order of Labor's Red Banner Medical Institute

[Abstract] A brief review is first presented of coxofemoral joint malformations, and note is taken of a need to study endogenous causative factors in skeletal anomalies, precisely in Uzbekistan where the practice of intermarriage of relatives increases probability of congenital defects. The present article deals with exogenous and endogenous factors in congenital deformations of the joint. A table is presented of etiological factors involved in development of the anomalies (157 patients, 118 women, 39 men):

Etiological Factors	Total No of patients	%
Exogenous	79	50.3
Radiation	4	2.5
X-ray	4	2.5
Chemical	15	9.5
Infectious diseases	20	12.8
Somatic "	11	7.0
Pathology of pregnancy + births	12	7.7
Anomaly of the amnion	4	2.5
Diseases prior to pregnancy	9	5.8
Endogenous	68	43.3
Heredity: dominant	23	14.6
recessive	16	10.3
Marriage of relatives	20	12.7
Age of parents	3	1.9
Rhesus incompatibility	6	3.8
Unknown	10	6.4

The causes of appearance of coxofemoral joint anomalies are variegated: a more precise exposure of the etiological factors requires exhaustion of the anamnesias of the lives of the patients and their parents, and a study of the genealogical proband for 2 or 3 generations.

USSR

UDC 628.32:636.4

HYGIENIC ASSESSMENT OF SEWAGE TREATMENT PLANTS FOR A LARGE PIG COMBINE

Moscow GIGIYENA I SANITARIYA in Russian No 6, Jun 77 signed to press 27 Sep 76 pp 91-93

KURTS, V. F., RASHCHUK, N. L., and SABUROV, YU. A., Chelyabinskaya Oblast Sanepid Station

[Abstract] Transition in animal husbandry to an industrial basis has been attended by multiple problems, one being the disposal, disinfection, and utilization of huge volumes of liquid manure and wastes formed in the production process. In 1974, an industrial complex for raising and fattening 108 thousand pigs, was created in the Uvelskiy Rayon of Chelyabinskaya Oblast. A 4200 m<sup>3</sup>/day treatment plant was constructed for purification of the sewage. The treated effluent is to be discharged into the Uvelki River. Three stages of treatment are involved. Stage I was set up by an Italian firm to treat solid and liquid phases (vibro filters, belt conveyers, hopper, bioler rotators to dry and dehelminthize the manure (ultimately for fertilizer). Stage II involves mechanical and biological treatment. Stage III includes sandy, forced filters. Apparently, shortcomings in the treatment process endanger the quality of water of the Kichiginskiy reservoir (fed by the Uvelki) and the effluent is as yet not to be discharged into the river. Standing ponds have been built for collection of sludge eventually to irrigate pasture lands. More efficient treatment measures are being considered.

USSR

UDC 628.312:576.895.1):628.3

ASSESSMENT OF EFFECTIVENESS OF DEHELMINTHIZATION OF SEWER WATER AND ITS SLUDGE BY SEWAGE PURIFICATION PLANTS

Moscow GIGIYENA I SANITARIYA in Russian No 6, Jun 77 signed to press 29 Oct 76 pp 93-94

RED'KIN, A. A., and PANIKOV, N. V., Zhitomir Municipal Sanepid Station

[Abstract] Zhitomir sewage treatment is carried out in stages: grids, sand traps, primary settling basins, biofilters, and secondary settling basins. The presently existing two methane tanks for sludge neutralization are not in operation. Prior to discharge into the Teterev river the sewage is chlorinated. To dry out the settling basins the sludge is pumped into sludge areas where it is kept for 2-3 years. The projected capacity of the treatment plants is 28,000 m<sup>3</sup>/day, but actually they handle twice as much, and more, sewage. The authors have studied the process used for destruction of helminths. They found that sewage reaching the municipal plants contains 3 to 14 helminth eggs per liter. The sludge which is being dried on the sewage plots for 1 to 2

years presents a danger in that it contains ascaris, trichuris trichiura, and pinworm. Mechanical and biological treatment is not enough to assure total helminth removal because of the two-fold overloading of the plants; this includes too rapid sand filtering and too short time on the sludge drying out plots. The authors recommend that some relief be provided to the system and that the two methane tanks be put into operation.

USSR

UDC 628.353.153:576.8.06:616.9.082.4

HYGIENIC PROBLEMS IN PURIFICATION AND DISINFECTION OF SEWAGE WATERS FROM AN INFECTIOUS DISEASES HOSPITAL

Moscow GIGIYENA I SANITARIYA in Russian No 6, Jun 77 signed to press 16 Aug 76 pp 19-22

PROKOPOV, V. A., candidate of medical sciences, Scientific Research Institute of General and Communal Hygiene imeni A. N. Marzeyev, Kiev

[Abstract] The character of hospital sewage has not always been taken into account in design and exploitation of the sewage treatment installations. This the author feels has been the result of a lack of pertinent construction standards. Soviet investigators (G. V. Shcheglova; Prokopov, in 1972) found that hospital sewage demands special attention, beyond that of domestic effluent. In this article Prokopov states that the treatment installation ought to meet the following demands: in the mechanical treatment (primary settling is eliminated with the use of bio-installations, operating on the method of complete oxidation of the sewage) and subsequent processing in the bio-installations under artificially-created conditions, a decrease in content of organic substances (expressed in BOD<sub>5</sub>), coli-bacteria, and intestinal disease bacteria must be achieved, not less than 95,95-98, and 95-98% respectively; in mechanical purification of the sewage and their subsequent processing in bio-installations under naturally-created conditions, the contamination of the sewage should be decreased no less than 99,99.9-99.99, and 100% respectively. He recommends that chlorination should use 2-3 times more chlorine for hospital sewage than for domestic sewage.

USSR

UDC 616.5+616.599:574-20)

INCIDENCE OF DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE AT THE ALMA-ATA MEAT PROCESSING COMBINE

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 3 (372), Mar 77 pp 82-83

MAKHAMBEGOV, Chair of General Surgery, Therapeutic Faculty, Alma-Ata Medical Institute

[Abstract] Among workers at the combine, pustular diseases of the skin and subcutaneous tissue amount to 8-12% of all diseases. Of these, panaritium accounted for 53% in 1973 and 40% in 1975. These diseases were twice as frequent among men as among women and were more frequent in the sausage making, preserving, and slaughter operations. Workers with less than two years experience were more susceptible, apparently due to lack of experience. The majority of the cases were in the upper extremities and exposed areas of the body. The preventive measures introduced include: treating the exposed areas with iodine and a solution of performic acid, and the application of a protective covering. Informative lectures are given. By 1975 work time lost had been reduced by 15.1% in comparison to 1973 and for panaritium the reduction was 28.4%. By 1975 the number of cases per 100 workers had been reduced to 2 and work time lost to 17 days. References 3 (Russian).

USSR

UDC 614.23:614]:658.38(477.46)

STANDARDIZATION OF THE WORK OF SANITARY PHYSICIANS

Moscow GIGIYENA I SANITARIYA in Russian No 4, Apr 77 signed to press 28 Jun 76 pp 32-34

AMINOVA, A. L., BORODAVKA, L. D., and ZASLAVSKAYA, YE. YE., Cherkasskaya Oblast Sanitary Epidemic Station

[Abstract] An analysis of the activity of health officers of the Cherkasskaya municipal sanitary epidemic station (category II) has been conducted with the aim of determining their work load, and the relative significance of the various forms of a health officer's activity within the general scope of the conducted work. This was done by means of an analysis of the journals, the monthly reports of the medical officers; time study was selectively employed. It was found that the relative significance of the various forms of a health officer's activity depends upon the section in which the health officer is working. Work connected with the inspection of projects under construction and in operation occupies 52-55% of the working time, health officers engaged in social hygiene and labor hygiene spending considerably more time on the inspection of projects under construction than on other sections of the work. This is due to the large volume of construction. In connection with a large volume of organizational work, as well as with the fact that the health

officers principally conduct the inspection of large projects, the load on inspection of the projects should be 0.7 inspection per one working day per labor-hygiene physician and 1.0 inspection per physician with respect to other allotments of work. Tables 2; references 2 (Russian).

USSR

UDC 614.1:313.13"742"-057:631(470,23-25)

OCCUPATIONAL CHARACTERISTICS OF MORBIDITY WITH TEMPORARY DISABILITY AMONG WORKERS OF THE KARL MARX LENINGRAD MACHINE-BUILDING PLANT

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 5, 1977 signed to press 1 Aug 76 pp 33-37

KUCHERIN, N. A.

[Abstract] Study of the medical records of 15,322 manual and office workers in 1972-1974 showed that the morbidity rates were highest among male manual workers (1250-1350 per 1000) and lowest among male office employees (750-850); female manual workers were in second place (1200-1250) and female office employees in third (800-900). The sick rates were about one and one-half times higher among the manual workers than among the office employees of both sexes. Male manual workers suffered mostly from upper respiratory tract infections, neurological disorders, peptic ulcer, suppurative, vascular, and skin diseases, while male white-collar employees were more often victims of cardiovascular, metabolic, and endocrine diseases. Female manual workers were particularly susceptible to neurological diseases, hypertension, liver, gallbladder, kidney, urinary, suppurative, and cardiovascular diseases, whereas female office employees showed a high rate of heart disease, peptic ulcer, pregnancy complications and gynecological disorders, appendicitis, and malignant and benign neoplasms. The high level of morbidity is attributed chiefly to working conditions, substantial physical stress, and occupational hazards. Lathe operators and foundry hands, male and female, exhibited the highest sick rates. Throughout the plant female manual workers doing the same work as their male counterparts generally had much higher sick rates. Tables 2.

## PRESENT-DAY TRENDS IN HOSPITAL PLANNING

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 5, 1977 signed to press 9  
Sep '76 pp 11-16

MUSORINA, A. N., architect

[Abstract] Soviet hospital architects are emphasizing the building of dynamic, modular structures that can be gradually added to or altered to meet new requirements without radically disrupting the entire complex. They are also concerned with air conditioning, equipment to supply oxygen at the patient's bed, monitoring facilities, etc. The "circular" system whereby all the patients are kept in specialized departments is giving way to an arrangement whereby the severity of the patients' condition determines the department. Such basic services as laundry, pharmacy, sterilization, and food preparation, are to be centralized and organized for all the hospitals in a city or rayon. Efforts are being made to achieve maximum mechanization of hospital routines to lighten the work load of junior personnel and increase their efficiency. Figures 4.



USSR

UDC 617-001-057

STATUS OF INDUSTRIAL ACCIDENT INJURIES AND WAYS TO LOWER THEM AT THE UZBEK METALLURGICAL PLANT IMENI V. I. LENIN

Tashkent MEDITSINSKIY ZHURNAL UZBEKISTANA in Russian No 4, Apr 77 signed to press 2 Jul 76 pp 54-56

VOYENNNYY, R. O., and MALIKOV, B. D., Traumatology Section of the Medsanchast of the Uzbek Metallurgical Factory imeni V. I. Lenin, Bekabad City

[Abstract] Analysis was made of the plant's health picture from 1965 to 1974. Of all the sicknesses of the workers, 4.2% were injuries (0.8% industrial, 0.3% on way to and from work, and 3.1% everyday type). The industrial type occurred in the shops (steel-alloy, rolling sector, shop of the chief mechanic --mechanical and forging injuries--casting, repair construction, main power shop--power and powerline injuries--, and the other shops), and in the factory as a whole. The industrial injuries are dropping in number (by a factor of 5 since 1965 to 1974), and in loss of working days (by a factor of 6). Most of the accidents occurred in the steel-alloy and rolling shops in which are concentrated the basic industrial processes. The accidents involving inability to work include fractures, contusions, burns, and wounds, usually of the lower extremities (50%) and especially, feet and hands. A large number of accidents (64%) occur in areas with a low level of mechanization (and involve skilled workers); the 30 to 40 year group are most hit, but they predominate at the plant. Of the men workers (25% of the force), 3.9% are injured. Over 40% of the accidents occur at the end of the month (pressure to achieve plan goals is high at that time); most accidents (50%) occur in the second shift (0800 to 1600) when more workers are there and jobs are more demanding. Accidents are caused by falling objects (43.5%), by the equipment (19.5%), and from heat factors--steam, hot water, metal burns. Fracture of safety rules is the largest problem (50%). Patients are treated in the surgical office of the polyclinic and the stationar (bed section) of the plant medsanchast. Recently most have been hospitalized, and this has cut down loss of workdays in the last two years from 19.0 to 13.4%. Invalidity involved only 3 people (0.1%), and death 2.4%, due to accident severity. Measures must be taken for prevention, and to improve the quality of the medical care. Reconstruction, mechanization, and automation are needed.

USSR

UDC 617-001.17:618.3

#### COURSE OF BURN DISEASE IN PREGNANT WOMEN

Tashkent MEDITSINSKIY ZHURNAL UZBEKISTANA in Russian No 4, Apr 77 signed to press 25 Jan 77 pp 42-43

KARABAYEV, KH. K., candidate of medical sciences, KAMALOV, S. K., and KHAIDAROV, G. A., Burn Center of the Department of Hospital Surgery, Samarkand Medical Institute

[Abstract] The authors have analyzed data collected by the Burn Center from 1960 to 1975, during which time the total of 4685 burned patients included 31 patients, aged 19 to 24, who were pregnant. Twenty-one were rural dwellers, 15 on kolkhoses, 10 at home, 2 students, and 4 laborers. All suffered flame burns. Burned area was 30-40% in 5, 41-50% in 2, 51-60% in 9, 61-70% in 5, 71-80% in 7, and 81- to more in 3. Four were in the first half of pregnancy, 27 in the second half; first pregnancy, 5; second, 26. Time of married life up to 1 yr for 2; 1 to 2 years for 25; 2 to 3 years for 4. Findings included deaths of 27 because of the extent of the burns. The burn disease aggravated the pregnancy course (premature births, still births). The authors urge that pregnant burn victims be placed under care of midwives or gynecologists to provide care if indicated. No references.

USSR

UDC 617.576-002.28

#### OSTEOCARTILAGINOUS EXOSTOSES OF THE HAND

Tashkent MEDITSINSKIY ZHURNAL UZBEKISTANA in Russian No 4, Apr 77 signed to press 21 Jan 76 pp 44-47

GROMOV, M. V., professor, LAZAREV, A. A., candidate of medical sciences, and CHANNU, I., Department of Traumatology, Orthopedics, and Military Field Surgery, Second Moscow Order of Lenin Medical Institute

[Abstract] The authors review the subject of osteocartilaginous exostoses, presenting views about their basic cause, sites at which they occur, and differentiation from osteomas and chondromas. Therapy is said to be operative. They have encountered 12 patients (8 men, 4 women) with such solitary exostoses of the metacarpal bone and phalanges of the fingers which comprise 9.6% of all tumors and limited processes of the hand; they did not see any case of multiple exostoses, nor were any in the wrist bones. Patient age was 18 to 58. X-ray revealed the problem. Removal in all cases was done with partial resection of the bone and subsequent curettage; in one case ultrasound was used. Eleven results were good; one recidivous exostosis required a second operation. Figures 2; references are cited by name only, in the text.

USSR

UDC 615.472:617-089-584-78

# A WEARABLE APPARATUS FOR ELECTRICALLY STIMULATED ANALGESIA

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 2, Mar/Apr 1977 signed to press  
28 Aug 76 pp 10-12

DOMANSKIY, V. L., and RABIN, A. G., All-Union Scientific Research Institute of Medical Instrument Making; Institute of Normal Physiology imeni P. K. Anokhin, Academy of Medical Sciences USSR, Moscow

[Abstract] The All-Union Scientific Research Institute of Medical Instrument Making developed an experimental model of electrical stimulator "Delta-7" for transcutaneous analgesia, which generates bipolar pulses with amplitude up to 100 V and duration of 0.1 - 0.5 ms. Its dimensions are 75x120x40 mm. Preliminary clinical-physiological studies of the effect of the apparatus on 40 persons with acute and chronic pain syndrome conducted at the clinic of traumatology and orthopedics of the Moscow Medical Institute imeni I. M. Sechenov showed that the device provided a distinct analgesic effect in persons with radicular pain syndromes. Transcutaneous stimulation of nerve trunks produced analgesia in the corresponding innervation zones, with the effect occurring within 1-2 minutes after starting stimulation. The analgesic after-effect persisted from 2 to 10 hours in most persons with cervical and lumbar osteochondrosis, myalgia and periarthritis. An analgesic effect was also produced in some cases of pain syndrome due to post-amputation neuroma, neuritis, tendovaginitis and others. Figures 2; references 11: 3 Russian, 8 Western.

USSR

UDC 615.472:616.34-085.844-72

# THE "ENDOTRON-1" ELECTRICAL STIMULATOR OF THE GASTROINTESTINAL TRACT

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 2, Mar/Apr 77 signed to press  
22 Oct 76 pp 12-14

KOROBKOV, A. I., All-Union Scientific Research Institute of Medical Instrument Making, Moscow

[Abstract] The "Endotron-1" electric stimulator, recommended for use in therapy of impaired motor activity of the gastro-intestinal tract, consists of a reference frequency generator, a pulse shaper, a power amplifier, a timing unit, and a power supply unit. It generates monopolar square pulses and series of bipolar square electrical pulses and provides continuous and periodic stimulation at 4 second intervals. The device was constructed by the All-Union Scientific Research Institute of Medical Instrument Making in collaboration with the Institute of Surgery imeni A. V. Vishnevskiy, the Kaunas Medical Institute, and the Laboratory of Proctology of the Ministry of Health USSR. It may be used in the hospital or at home. Figures 2; references 6: 4 Russian, 2 Western.

USSR

UDC 615.472:615.844

#### APPARATUS AND ELECTRODES FOR NERVE STIMULATION

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 2, Mar/Apr 77 signed to press  
16 Jul 76 pp 14-17

DUBROVSKIY, I. A., and BOBKOVA, V. M., Moscow Physical Engineering Institute;  
Institute of Cardiovascular Surgery imeni A. N. Bakulev, Academy of Medical  
Sciences USSR, Moscow

[Abstract] This spring-type bipolar electrode consists of electrode contacts of beryllium bronze strips 1.4 mm wide and 0.3 mm thick fastened to a 15x7.5 x1 mm Teflon plate with a lead soldered from the other side of the contacts. The distance between contact strips is 2.3 mm and the length of the contact unit is 6.5. The opposite side of the plate is insulated with epoxy resin. The mass of the electrodes is 10 g. They are attached to the nerve without any other adaptation. Tests on dogs showed the nerve trunk resistance averaged 4-6 kOm. The threshold amplitude of current pulses at which an effect is observed ranged within 1-2 mA; consequently the pulse amplitudes should constitute 4-12 V. The device is pictured and the construction diagram and technical characteristics are presented in the article. Figures 4; table 1; references 8: 7 Russian, 1 Western.

USSR

UDC 615.478.6.616.74-085.844-78

#### THE "STIMUL-1" APPARATUS FOR ELECTRICAL STIMULATION OF MUSCLES

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 2, Mar/Apr 77 signed to press 25  
Oct 76 pp 17-19

ANDRIANOVA, G. G., PROKOPENKO, G. I., SHABASHEVICH, L. B., and KHVOSTOV, L. N., All-Union Scientific Research Institute of Medical Instrument Making,  
Moscow

[Abstract] The "Stimul-1" produces an alternating sinusoidal current (frequency 2 kHz) and causes effective muscle contraction without significant pain sensations. The functional circuit of the device is presented. It includes the use of microminiature logic circuits, operational amplifiers and field-effect transistors. Clinical tests of the device have shown its high effectiveness in cases of spastic and anergic pareses, paralysis of different etiologies, and in prevention of muscular atrophy from prolonged immobilization after trauma or inflammatory affections of the joints, after scoliosis, and diseases of the neuromuscular system and for stimulating the muscles for training purposes. Figures 2; references 9 (Russian).

USSR

UDC 615.844

# ELECTRICAL STIMULATION OF ORGANS AND TISSUES IN CLINICAL MEDICINE

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 2, Mar/Apr 77 signed to press  
12 Nov 76 pp 6-9

BREDIKIS, YU. YU., Kaunas Medical Institute

[Abstract] Electrical stimulation of organs and tissues is useful in cases in which the pathological process has not caused changes of the organ but only disturbed its function. The first All-Union Scientific Conference on Electrical Stimulation (in 1975) reported progress in this field, including the use of pacemakers, stimulation of the brain in stereotaxic operations, epilepsy, pain relief, temporary stimulation of the gastrointestinal tract during pareses in pain syndrome, etc. Problems retarding further development in this area include: the choice of optimal parameters of pulses for different organs and tissues; obtaining proper feedback indicating the state of specific organs in development of biocontrol systems, especially in relation to the gastrointestinal tract, the urinary-excretory system, the uterus and the respiratory system; and the problem of the tissue-electrode contact in electric stimulation. Improvement and miniaturization of electric stimulators is underway. In the Soviet Union stimulators and electrodes for radiofrequency stimulation of the urinary bladder are being developed and used and a system for radiofrequency stimulation of the atrium cordis to relieve tachycardia attacks is being used in clinical practice. There is still no wide-scale use of electrostimulation of the carotid sinus nerve to control hypertension.

USSR

UDC 615.47:62:007.5

# OPTIMIZATION OF PRODUCTION TIME SCHEDULES IN AUTOMATIC CONTROL SYSTEMS OF MEDICAL TECHNOLOGY ENTERPRISES

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 2, Mar/Apr 77 signed to press 4  
Mar 76 pp 45-48

PASHCHENKO, V. S., and SINEL'NIKOV, YU. B., Special Construction Technology Bureau of Medical Technology, Kiev

[Abstract] An algorithm for compiling an optimal production schedule graph for a shop floor production area during a planned production period was developed on the basis of the criterion of minimizing the total time per piece of work as applied to automatic control systems used in the biomedical engineering industry. After introducing a critical work item, critical equipment and a conflicting situation, the LRT rule is used in combination with the sio rule and the min rule of idle time, the relation to solve the conflicting situation in compiling the optimal schedules graphs is adduced, and its solution is presented in a form suitable for computerized programming. References 2 (Russian).

USSR

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TREATMENT OF PERFORATION OF THE UTERUS IN INDUCED ABORTION

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian No 1, 1977 signed to press  
26 Aug 75 pp 41-42

KOZLOV, L. A., professor, and ZOLOTAREVA, M. P., Kazan' Order of the Red Banner  
of Labor Medical Institute imeni S. V. Kurashov

[Abstract] Based on their experience with the treatment of perforation of the uterus in 61 women on whom they performed abortions, the authors recommend surgery in cases where the perforation is complicated by interligamentary hematoma, mesenteric tumor, dermoid cyst, etc. Uncomplicated perforations can be treated conservatively, with care taken to remove the residues of the ovum. In cases where the uterus is perforated at the beginning of the abortion, other factors have to be taken into account in determining whether the procedure should be halted or continued.

USSR

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DIAGNOSIS, PREVENTION, AND TREATMENT OF STAPHYLOCOCCAL INFECTION IN THE  
NEWBORN

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian No 1, 1977 signed to press  
24 Feb 76 pp 1-5

KHAMIDULLINA, A. KH., professor, Kazan' Order of the Red Banner of Labor  
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[Abstract] Because septic infection under modern conditions may be totally asymptomatic or be manifested by a great variety of symptoms, particularly pyodermas which can be mistakenly diagnosed as furunculosis, purulent conjunctivitis, etc., the correct diagnosis may be made too late to keep the disease from spreading. The differential diagnostic criteria suggested by the author and prompt institution of therapy in a specialized hospital (antibiotics, antistaphylococcus gamma globulin and anti-staphylococcus plasma, blood transfusions) will prevent the disease from assuming epidemic proportions. The principal prophylactic measures include strict registration of staphylococci carriers and scrupulous hygienic care of the newborn. Administration of staphylococcus toxoid to mothers, infants, and medical personnel provides effective if brief immunity. References 2 (Russian).

USSR

UDC 617-089;5+616-036.882-03]007.2:658,53

SETTING WORK LOADS FOR ANESTHESIOLOGY AND RESUSCITATION DEPARTMENT PERSONNEL

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 5, 1977 signed to press 23 Dec 76 pp 29-33

KHRISTYUKHIN, A. K., GENKIN, A. G., KLINCHENKO, N. M., and POLYANSKAYA, Z. M., All-Union Institute of Social Hygiene and Organization of Public Health imeni N. A. Semashko

[Abstract] Staffing patterns were established in 1969 for all categories of medical personnel concerned with anesthesia and resuscitation differentiated for thoracic, neurologic, traumatologic, burn, stomatologic, gynecologic, ophthalmologic, and otorhinolaryngologic surgery. Analysis of the work of physician and nurse anesthetists and specialists in resuscitation (in terms of the average number of patients operated under general anesthesia in specialized surgical departments relative to the number of patients admitted to each department, average number of operations under general anesthesia in general surgical departments of different hospitals relative to the number of patients admitted, average amount of time spent by anesthetists during different kinds of operations, and structure of the workday of an anesthetist) in 11 hospitals in 6 cities situated in different economic and geographic regions of the country with a capacity ranging from 400 to 2650 beds revealed significant divergences from one hospital to another not necessarily due to the number of patients treated or size of the facility. Some suggestions are offered on methods of determining the appropriate staff for a given hospital based on objective data, i.e., number of patients operated under general anesthesia and number of those admitted. Tables 5.

USSR

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URGENT PROBLEMS IN THE ORGANIZATION AND PLANNING OF EMERGENCY PREHOSPITAL CARE

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 5, 1977 signed to press 18 Jan 77 pp 25-29

VERENTSOV, M. M., and SIMONYAN, K. N., candidates of medical sciences, All-Union Institute of Social Hygiene and Organization of Public Health imeni N. A. Semashko, Moscow

[Abstract] More specialized medical teams--cardiological, toxicological, neurological, etc.--working in close cooperation with initial medical care hospitals and first aid stations are needed to raise the level of emergency care in urban areas. All the facilities that provide such care should be combined into a single system and be operated in essentially the same manner. The main problems that now need to be solved are elimination of the delays in

reaching accident victims, avoidance of duplication (i.e., 2 rescue squads summoned to the same place), better integration of first aid physicians in the hospital system, and overcoming the medical ignorance of the public so that requests for emergency care will be more justified (e.g., of the approximately 6000 calls received daily by the Moscow first aid stations, only 3000 are actually warranted). References 20 (Russian)

USSR

UDC 616.5-089.844-02:616-001.17

#### AUTODERMOPLASTY IN III-A DEGREE BURNS

Leningrad VESTNIK KHIRURGII in Russian Vol 118 No 5, May 77 pp 94-97

MAKAREVICH, V. T., candidate of medical sciences

[Abstract] Experience has shown that the site of a dermal burn affects its course, treatment, and outcome. Spontaneous epithelialization of dermal burns of functionally-active areas is frequently accompanied by development of rough, hypertrophic scars and keloids. Burns in such areas can be treated by use of autodermal plastic surgery which permits anatomical and functional restoration of the skin cover with good cosmetic results. Indications for this type of treatment for burns in functionally passive areas include conditions where epithelialization is replaced by fusion of the cover and recidivous granulation on the healing parts of the wounds; and, where spontaneous healing is still possible but the healing period, with conservative treatment, far exceeds the time required with operative treatment. Autodermal plastic surgery of dermal burns of functionally passive areas of the extremities is indicated in case of appearance of disruption of function of the joints of the affected limbs and in case of injury to areas subject to dangerous ulcers (anterior surface of the skin and its lower third sector). The author has based his conclusions on work with 103 patients, involving 149 operations. Patient age was 18 to 50. Burns involved up to 10% of the body surface (82); 11 to 20% (15); 21 to 30% (6). In 51 patients (49.5%) the burns were I-II degree; in 10 (9.7%) the area was not large but deep; in 42 (41.7%) the dermal burns were "clean". Antibacterial preparation of the burn has been described earlier by the author in VOYENNO-MED. ZHUR. No 1, 1973. Table 1; references 14: 4 Russian, 10 Western.



USSR

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STUDY OF OXYGEN SUPPLY AND CONSUMPTION IN FREE SKIN TRANSPLANTS

Leningrad VESTNIK KHIRURGII in Russian Vol 118 No 5, May 77 pp 101-103

DMITRIYEV, G. I., and VOGRALIK, Gorkiy Scientific Research Institute of Traumatology and Orthopedics

[Abstract] Free grafting of skin transplants unavoidably involves disruption of blood circulation which impedes delivery of oxygen to the transplants and disrupts energy exchange in the tissue graft. This can be one of the causes of non-healing of the transplant. The authors have studied oxygen dynamics in free skin plants in the periods from 1 week after operation to 12 mos, and more, in 43 patients being treated in connection with post-burn deformities and contractures. They assembled data on oxygen shortage in skin transplants, which is a problem especially 3-4 weeks after the grafting, and devised a methodology of providing oxygen at the site. With free grafting of skin on the extremities, the latter are placed in a polyethylene bag into which oxygen is added from a central supply system. The bag, at its proximal end, is tied with a bandage, thanks to which a positive oxygen pressure is created. This facilitates saturation of the transplant with oxygen. The oxygen is added at intervals at the time of the bandaging, other therapeutic procedures, intake of food, and the like. The course of oxygen therapy is continued for 2-4 weeks--up to normalization or approximation of the normal value of  $pO_2$  in the transplant. This local oxygen therapy is reportedly rather effective. Figure 1; table 1; references 10: 7 Russian, 3 Western.

USSR

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USE OF SKIN OF RECONVALESCENTS IN TREATMENT OF WOUNDS IN PATIENTS WITH BURN EMACIATION

Leningrad VESTNIK KHIRURGII in Russian Vol 118 No 5, May 77 pp 97-100

SOKOLOV, YE. F., candidate of medical sciences, Uzbek Republic Burn Center, Tashkent

[Abstract] Burn treatment is sometimes complicated by delayed arrival of the patient for care, and by unusually protracted conservative therapy which leads to emaciation. In the latter patients transfusions, general reinforcement, and, antibacterial therapy are of little effect, while operative therapy can destroy autotransplants or complicate the healing process. The author has been studying regenerative processes since 1968 (see, also, KHIRURGIYA, 1975, No 4). The author's Center has treated 3200 patients, from 1968 to 1974; 73 (2.3%) had burn emaciation. Their age was from 3 to 60; 42 were male, 31 female. Treatment included autodermoplasty (20), autodermoplasty plus homo-skin (18), and autodermoplasty plus skin from reconvalescents. The author

has found that application--on the wounds of a burn patient with burn emaciation--of an extract of skin from the reconvalescents promotes stimulation of regenerative processes, healing, and active growth of autotransplants. Figures 2; table 1; references 3 (Russian).

USSR

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#### IDOPATHIC HYPERTROPHY OF THE MYOCARDIUM

Moscow ARKIV PATOLOGII in Russian Vol 39 No 5, 1977 signed to press 16 Jul 76 pp 12-19

GALAKHOV, I. YE., and VESELOVA, S. P., Laboratory of Pathological Anatomy, All-Union Cardiological Scientific Center, Moscow

[Abstract] The origin and application of the term idiopathic hypertrophy of the myocardium (IHM), and the two forms of IHM are described. The pathological anatomy unit of the Institute of Cardiology imeni A. L. Myasnikov, Academy of Medical Sciences USSR, identified (at autopsy) 20 IHM cases in all deaths, 795, from 1963 to 1975 from various diseases of the heart. The number of cases at that Institute was higher than at usual therapeutic hospitals because it is a specialized establishment which gets obscure diagnostic problems and cases of cardiac insufficiency of unexplained etiology, not easily amenable to pharmaceutical treatment. Patient age was 27 to 66 (fifteen men, 5 women); half of the cases were in the sixties. Only two cases of the IHM were diagnosed during life; the others had symptoms of ischemic heart disease (7), rheumatic defects of the heart (7), idiopathic myocarditis (3), chronic bronchitis and pulmonary heart (1). All of the IHM were of the dilation form. Pathological studies did not reveal changes specific for that form, except for non-uniform hypertrophy of the muscular fibers. Usually seen were interstitial, diffuse, and small-focal cardioscleroses, sclerotic changes of the endocardium and subendocardial sectors of the myocardium most often in the area of the efferent tract of the left ventricle--probably the cause of the disruption of cardiac conductivity, in particular, blockade of the left division of the Bundle of His. Acute or chronic inflammation of the heart could not be seen histologically. The authors point out that their findings are confined to patients seen late in the disease. Laboratory studies on patients in earlier stages of the disease might help clarify the etiology and disease mechanisms. Figures 7; references 17: 4 Russian, 13 Western.

USSR

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EFFECTIVENESS OF SIRE RATINGS BY OFFSPRING, USING THE 'DAUGHTER-MOTHER' AND 'DAUGHTER-HERDMATE' METHODS

Kiev TSITOLOGIYA I GENETIKA in Russian Vol 11 No 1, Jan/Feb 77 signed to press 19 Apr 76 pp 58-61

NOVOSTAVSKIY, V. N., GRISHKO, T. A., and YATSENKO, L. YA., Ukrainian Scientific-Research of Animal Husbandry for Steppe Regions, Askaniya-Nova

[Abstract] The rating of sires on the basis of quality of offspring at the present time plays an important part in the improvement of dairy herds. However, no clear evaluation of the effectiveness of individual rating methods has been arrived at. To clarify this problem the authors studied 9 pedigree herds of Red Steppe cattle whose productivity lay in the range of 3,200-4,300 kg of milk per year (average per cow). The "daughter-mother" and "daughter-herdmate" methods were used in parallel in connection with 79 sires. "Repeatability coefficients" for several lactations (yield, fat content and overall production) reveal a decided advantage on the side of the daughter-mother method. However, combined use of these two methods is recommended, along with systematic annual refinement of previously obtained sire ratings on the basis of primipara heifer quality. Tables 4; references 6 (Russian).

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